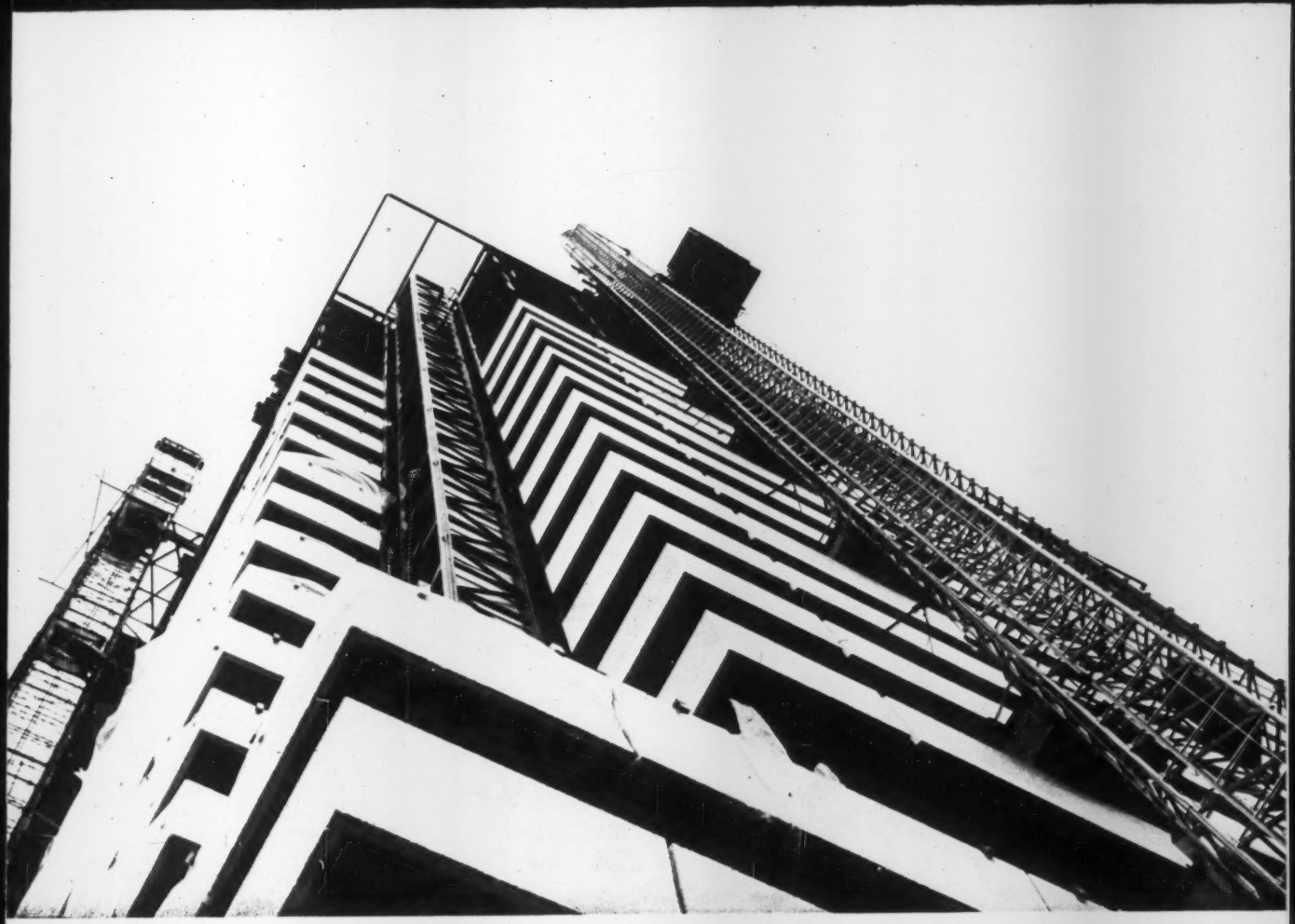
ENGINEERING NEWS-RECORD



Cantilevered floors notched at the corners p.35

STEVENS NICG GS N I
NIV MICROFILMS INC EDITO
513 N FIRST ST
ANN ARBOR MICH C 4-5

A McGRAW-HILL PUBLICATION

Economy, durability, easy maintenance, functionalism—*all* are elements of this handsome new sports stadium at Maple Avenue Field, Altoona, Pa. Construction time was cut to approximately *one month* by the use of three-foot-wide prestressed box beams, with molded-in steps, resting on concrete columns . . . a deck formed of prestressed channel beams . . . precast seat supports . . . and a four-foot parapet of prestressed concrete double tee beams placed on edge. The contractor used Penn-Dixie cement.

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Penn-Dixie means Permanent Dependability

Owner: *City of Altoona, Park & Recreation Board, Altoona, Pa.* · Contractor: *New Enterprise Stone & Lime Co., Inc., Prestressed Division, New Enterprise, Pa.*
Engineer: *Frederic A. Nassaux & Associates, Consulting Engineers, 312 Trust Bldg., Chambersburg, Pa.*

Some 5,200 tons of Bethlehem steel piling were used in constructing this portion of the Niagara Thruway for the State Department of Public Works. General contractors: Stimm Associates, Inc.; Thruway operator: New York State Thruway Authority; Consulting engineers: Harold J. Senior (Senior, Bissell & Bronkie), Williamsville, N. Y., and Clarke & Rapuano, New York.

Steel piling helps traffic flow again on old Erie Canal

An abandoned section of New York's Erie Canal was chosen as the route for part of the Niagara Thruway which connects Buffalo with Niagara Falls. To support the road bed, some 3,300 tons of Bethlehem H-piles were driven to refusal, and about 1,900 tons of Bethlehem sheet piling held back the soft banks of the canal and the adjacent Black River Ship Canal during highway construction. Actually, elevation of the lowest point of this highway pavement is 9 ft below the high-water level of the canal, nearby.

The Niagara Thruway, now completed and in use, cuts in half the driving time from Buffalo to the Niagara Falls area.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.
Export Sales: Bethlehem Steel Export Corporation

Horses and mules once tramped the towpath along the bank of this section of the Erie Canal, known as Black Rock Lock.

Today a modern 4-lane concrete highway lies on the canal site. About 1,200 tons of Bethlehem concrete reinforcing bars were also used in constructing this section of the Thruway.

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EIGHTY SEVENTH YEAR OF PUBLICATION

A McGraw-Hill Publication • 330 West 42nd Street, New York 36, N.Y. • LOngacre 4-3000

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ENGINEERING NEWS-RECORD Vol. 166, No. 24, JUNE 15, 1961

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Printed at Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traendly, Senior Vice Presidents; John R. Callaham, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, President; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders. Publisher reserves the right to refuse unqualified subscription.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail postage paid at Albany, N. Y. Printed in U.S.A. Title registered in U.S. patent office.

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SUBSCRIPTIONS: Send subscription correspondence and change of address to Fulfillment Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify, publisher *promptly of any change of address, giving old as well as new address, and including postal zone number,* if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

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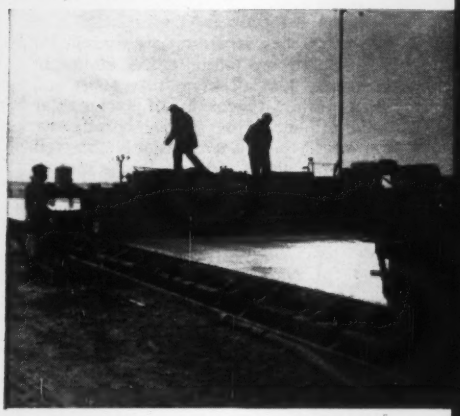
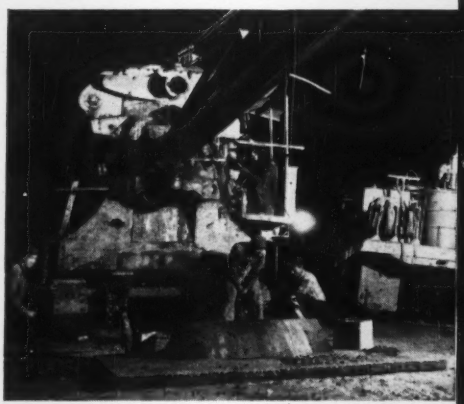
Quarry and crushing facilities operated 6 days a week, on two 10 hour shifts, with machinery lubricated between shifts. Daily 7 to 10 thousand tons of rock were processed to produce stone for concrete and "roadstone" for runway base. Western even set up a rod mill to produce high quality sharp sand from fines. (Below, right) To help keep operations going steadily, Western employed 2 tank wagons for on-the-spot fueling at the quarry. (Below, left) An in-line, dry-batch plant was set up on the job by Western. Batch trucks fitted with 4 bin separators, each bin holding 1.37 cu. yd. batch, were used. 4 exactly measured charges were delivered to each bin.

Knowing how one contractor meets the demands of time, efficiency, profit, may help you in your next job.

Trucks, water tankers, etc., were serviced from 1 week to every other day. Basic lubricants were Delvac, Mobilplex EP and Mobilgrease MP.



From dawn to dusk, on 10 hour shifts, 5 to 6 thousand yds. of concrete were placed each day. Final finishing operations went on into the night.



Maintenance and lubrication was also done mostly at night. Critical earth-moving and paving equipment was lubricated and oil changed daily, with fuel and lubrication trucks brought right to the machinery site.

How Western meets $11,000,000 contract for 1st all-jet civilian airport

Contractor moves 90 carloads of equipment 2,000 miles—sets up complete operation from quarry to batch plant

The job . . . to drain, grade and place 250,000 cu. yds. of concrete for ramps, taxi-ways, aprons. The contractor . . . Western Contracting Corp., Sioux City, Iowa. The place . . . Dulles International Airport, 23 miles from Washington.

Starting from scratch, Western set up a completely integrated, self-sufficient operation. It shipped in almost 90 railroad carloads of equipment for quarrying, rock-crushing, batching, earth-moving, and paving in addition to over-the-road equipment. *From raw rock to in-place concrete, all elements were controlled by Western.* Western established its own quarry and crushing facilities to insure quality and supply. It set up a batch plant and drilled its own well. Western relied on two outside suppliers. One was for vital cement needs. The other, for lubricant and fuel needs, was Mobil. Mobil scheduled deliveries round the clock. Mobil also worked out efficient storage and handling facilities, supplying and installing, eleven 4,000 gallon storage tanks plus high speed pumps.

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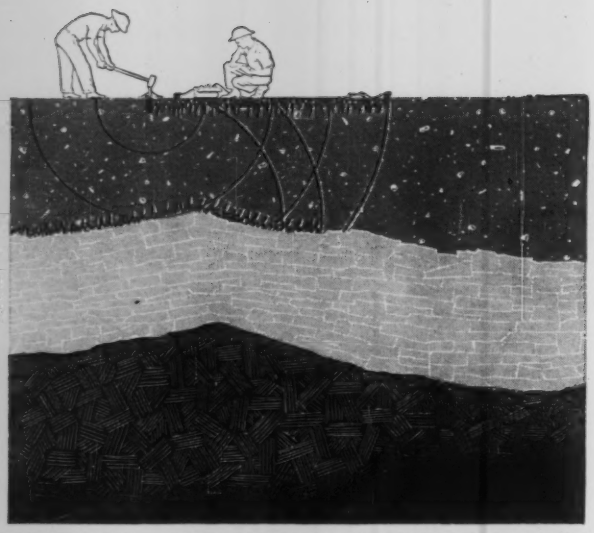

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The GEOCHRONE is being used in increasingly wider ranges of applications. In addition to the primary function of determining depth to bedrock, it can also be used to determine depth to water tables or permafrost. Many contractors are using it to determine rippability of materials. It is even being used to locate alluvial gold deposits.

This versatile instrument is currently available at **$750** F.O.B. Washington, D.C. *For additional information contact: Dept. EN*

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Reader Comment

Code Too Strict?

SIR—Your article on the St. Louis Building Code revision (ENR Mar. 30, p. 18) prompts me to point out the urgent need to revise the ACI Code. There are three groups of regulations that prohibit design of modern and economic concrete structures:

1. Limit of tension of hard grade steel deformed bars to 20,000 psi—compared with French Code allowable bar stress of about 30,000 psi and 34,000 psi for welded mesh, German Code stresses of about 31,000 psi and 34,000 psi etc.

2. Minimum protection for reinforcement of concrete surfaces exposed to the weather as high as 2 in., and ¾ in. for unexposed surfaces, Sec. 507 (a) (b)—compared with the established practice of countries in continental Europe 1½ cm (⅝ in.) and 1 cm (⅜ in.) respectively (under ACI Code most thin shell structures are excluded).

3. Numerous limitations of minimum size, i.e., 120 sq. in. min. section and 8 in. min. dimension of rectangular column (sec. 1101 (a)). Throughout the world there is a commonly accepted limit of about 60 sq in. minimum section and a minimum dimension of 6 in. Similar comments apply to wall thickness sec. 1111 (c) (d), slab thickness sec. 709 (d), joint thickness sec. 708 (a), etc.

Introduction of above mentioned most urgent changes may reduce the cost of concrete structures by some 10%, open new possibilities of economic investment, and may speed up (as it is the case of St. Louis) the coming of a new construction boom.

No building code can effectively prevent even serious accidents. It cannot be a substitute for the judgment of the engineer, or for his responsibility to ensure the safety of erected structures, but it can effectively prevent technical advancement by maintaining out of date standards.

The purpose of the building code is to facilitate design and not to limit it. In the ACI Code we have an excellent rule: "The limits of thicknesses and quantity of reinforcement may be waived where structural analysis shows adequate strength and stability" sec. 1111 (k). Unfortunately, it is limited to the design of reinforced concrete walls only.

(*Reader Comment continued* p 12)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

GOODYEAR

Q: What do Goodyear Earthmover Rims have that no others have?

A: MORE times FOUR

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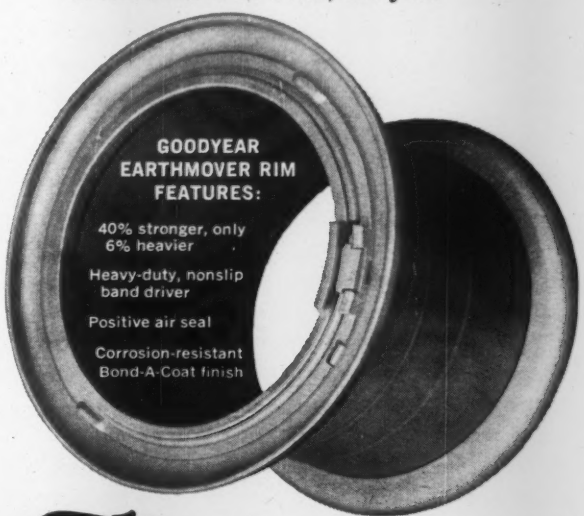
2. MORE kinds of rims: Maximum rim performance stems from proper specification. Goodyear makes the *only complete line* of earthmover rims. Result: The choice that permits you to get exactly the right rim for the job.

3. MORE rim engineering help: Goodyear has more engineers designing *and selling* rims than any other company. And they know tires, too. Result: The help you need in choosing the right rim for top performance—longer tire life.

4. MORE rim "firsts": The first *true* earthmover rim, the first 5° rim, the first tubeless rim—in fact, every major earthmover rim advance was made by Goodyear. Result: The very latest in rim design and manufacture at work, for you.

What better reasons for choosing Goodyear as your rim supplier? Only these: The desire and ability to design and build any rim that may be needed for *tomorrow's* earth-moving equipment. No matter what your rim needs or plans, you'll find it pays to call on Goodyear. See your local rim distributor, or write: Goodyear, Metal Products Division, Akron 16, Ohio.



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"We'll prove to you—in your own language—that the new TD-15 can make you far more money, for more years, than anything in its horsepower class.

"C'mon in now and spend 15 minutes on a new '15'! Or call us for a demonstration on your job. See for yourself how it's tailored to your operation."

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Steel fabricator helps customer reduce steel requirement 14% with A36 Structurals

Architect: Donald E. Stoll, A.I.A., (left) and Robert G. Graham, Jr., design engineer for McMurray Structural Steel Co., both of Nashville, Tenn.

These new 16-inch, wide-flange lightweight sections at 31 lbs. in A36 Steel were used in lieu of the 16-inch, wide-flange sections at 36 lbs. necessary in A7 Steel.

"Dominion Electric Corporation's new manufacturing plant in Gallatin, Tennessee represents the Southeast's first combination of the advantages of A36 steel, lightweight sectional structure, and the plastic method of design," says Mr. Donald E. Stoll, architect for the project. "Plastic design makes the total steel area one of working strength."

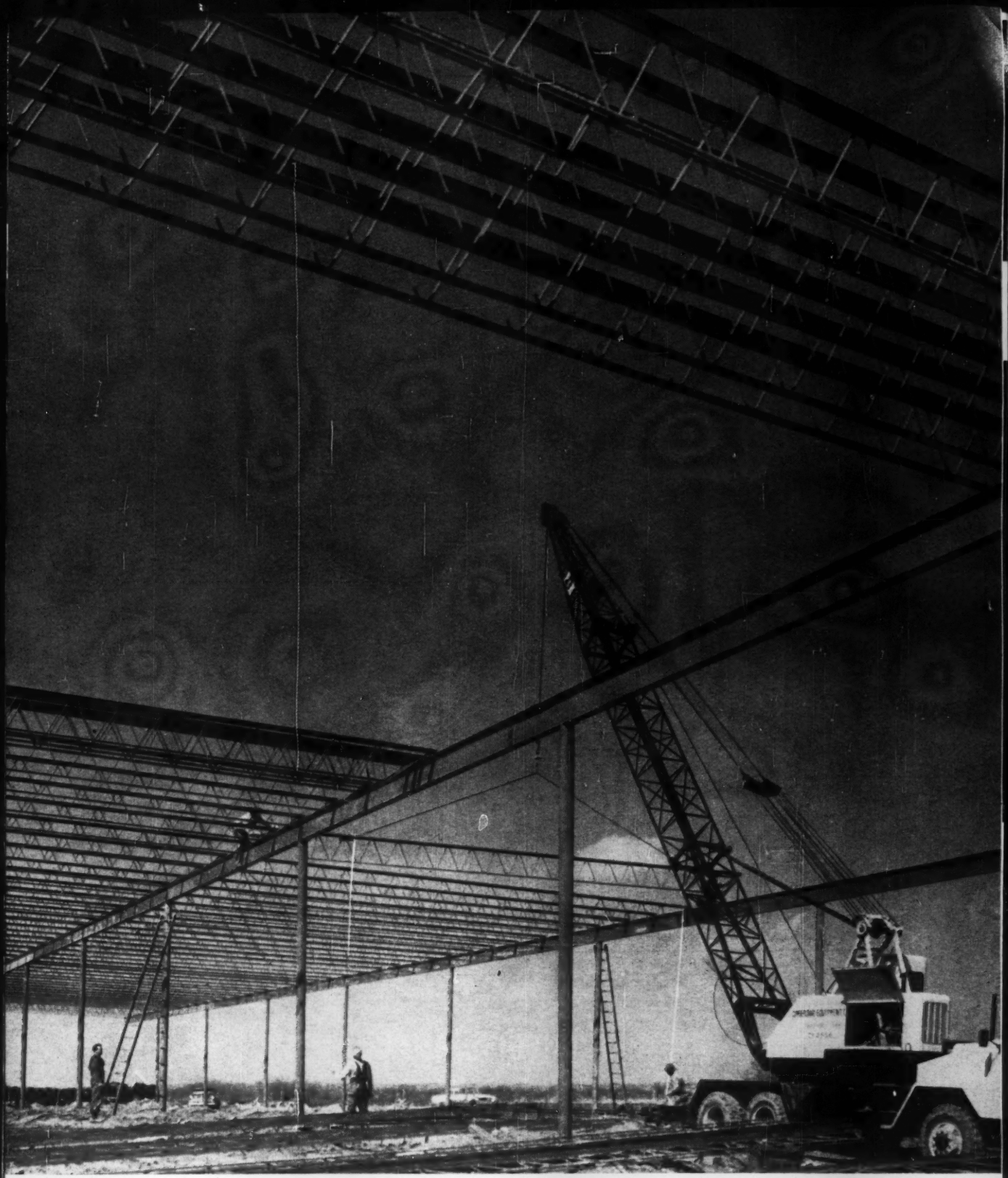
Mr. Robert G. Graham, Jr., design engineer at McMurray Structural Steel Company, Inc., fabricators of all the steel for the plant, said, "Specifying A36 Steel for our beams reduced our structural steel requirements by six tons and cut approximately $1,500 from our costs. Structural steel in this project consists of 36 tons of beams and 10 tons of structural grade pipe, used as columns. In addition, there are 85 tons of bar joist purlins made of A7 Steel. These were not available in A36 at the time we started work, but if they had been, they would have saved us even more. We used 36 tons of A36 beams and we would have needed 42 tons of A7 for the job—a saving of 14% on the beams."

All the steel, including the new weight-saving structural shapes recently introduced, was supplied by the Tennessee Coal & Iron Division, United States Steel. A36 Steel with its higher yield point of 36,000 psi, costs very little more than A7 Steel.

The plastic concept of design, so important on this project, is based on the ultimate load capacity rather than on initial yielding. Mr. Stoll said, "It is being used extensively where sound, economical steel design is the objective." Mr. Graham also estimated that the plastic concept resulted in a *50% saving of design time* on this project. For more information, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. USS is a registered trademark.

United States Steel Corporation • Columbia-Geneva Steel Division • National Tube Division • Tennessee Coal & Iron Division • United States Steel Supply Division • United States Steel Export Company

USS **United States Steel**



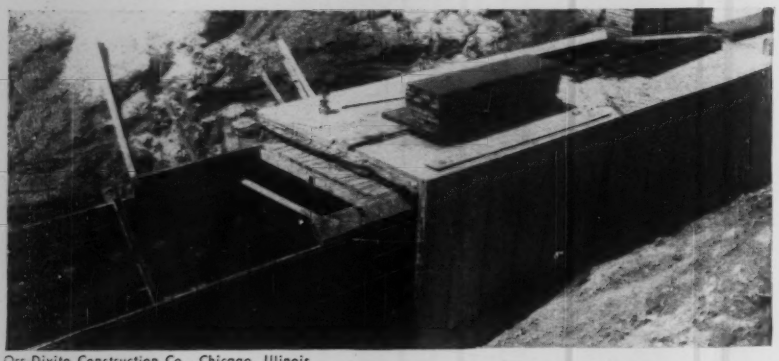
New plant of Dominion Electric Corporation, Gallatin, Tennessee, under construction by General Builders Corporation, Nashville, Tennessee. Higher strength USS A36 Steel Beams saved 6 tons of steel. Note simplicity of design.

This mark tells you a product is made of modern, dependable Steel.

BETTER ROADS with Symons Forms

Tonn and Blank, Inc., Michigan City, Indiana

Bridge . . . Symons standard prefab panels were ganged for arched girders on bridge job. Contractor used 28 ganged sections.



Orr-Divito Construction Co., Chicago, Illinois

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Symons can help you with your road building problems. Our engineers will prepare complete form layouts and bill of materials. Symons Forms may be rented with purchase option—rentals to apply on purchase price. Information on Symons Steel-Ply Forms sent *free* on request.

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. . . Reader Comment

I am convinced that in the interest of technical advancement and of public safety, this guarantee of freedom of design should be extended to all provisions of any building code.

JOHN J. HEMPEL
Roselle Park, N. J.

Editor's Note: For more on St. Louis' building code see pp 32, 96.

Enforcing Building Codes

SIR—I find ENR's reporting on building codes and failures very interesting.

There should be more exploration into the complete lack of respect for building codes, or even recognized minimum building standards of design. You will find this condition exists—especially among manufacturers of prefabricated metal buildings—for several reasons:

- Many clients are not correctly informed as to the true values of minimum building design standards in relation to cost.
- Very few installations require certification by engineer or architect as to design standards.
- Very few clients will consult an architect or engineer, because of the manufacturers' so-called free services.
- The manufacturers as a rule exercise no quality or performance control over dealer or contractor of installations.

Many manufacturers do have buildings designed to specified recognized standards, but the question is, what steps can be taken that all buildings meet these standards?

LLOYD ELTON WEAST, JR.
Kansas City, Mo.

Surveying Is Engineering

SIR—A great many companies are trying hard to implement the ASCE policy referred to in your fine editorial "Surveying Is Engineering" (ENR Apr. 27, p. 102). Many of us feel we are making substantial gains in this direction.

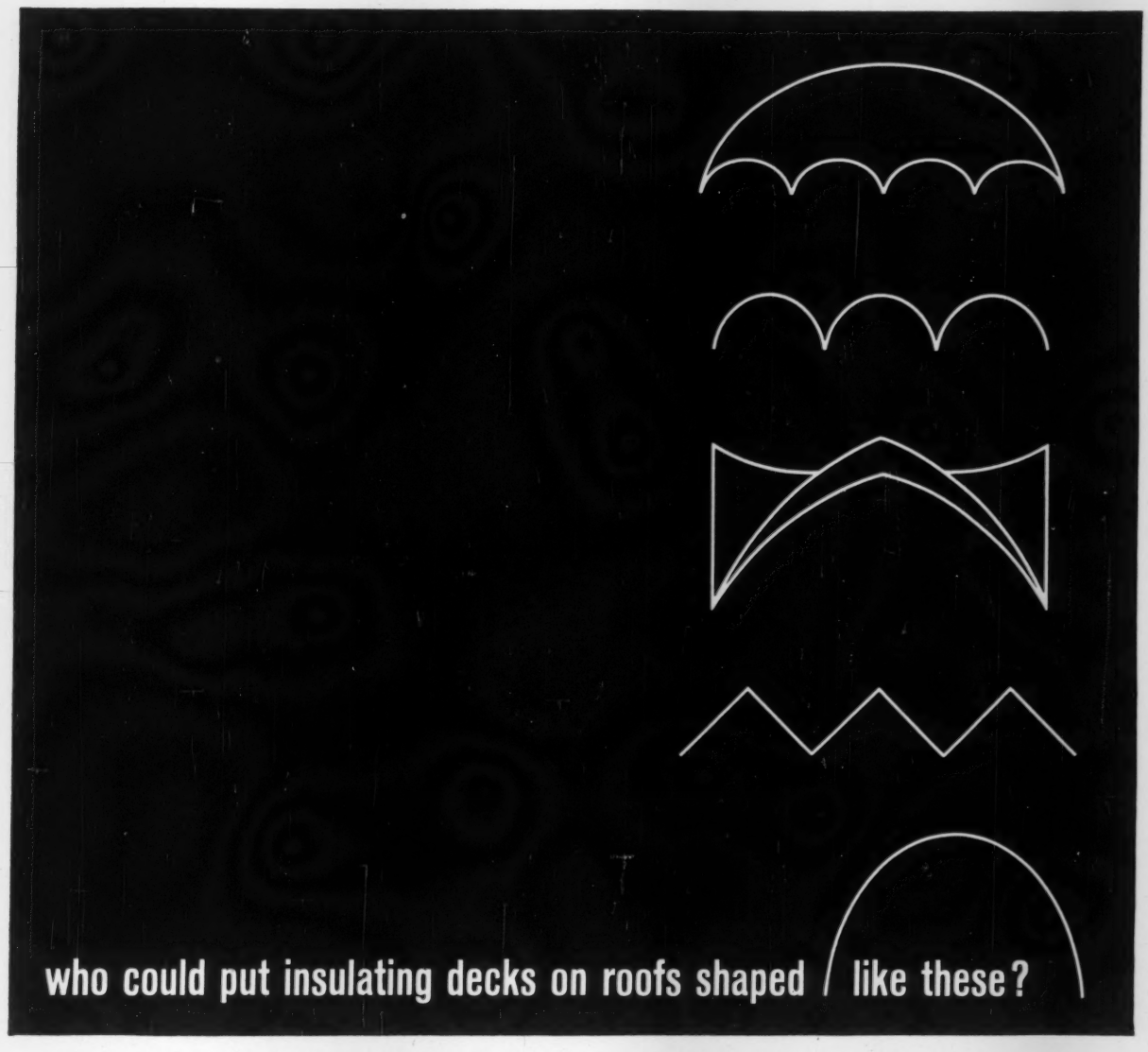
We recognize that there is still much to do in making sure that both those who need surveying and mapping and those who perform this work comply with the engineering standards of performance and ethics.

A. O. QUINN
Chief Engineer
Aero Service Corp.
Philadelphia, Pa.

Add a By-line

SIR—In the article Belled Caissons Anchor Walls as Michigan Remodels an Expressway (ENR May 11, p. 28), joint authorship credit should have included Mr. H. R. Puffer, since deceased, who was Engineer of Bridge and Road Design for the Michigan State Highway Department at the time the original manuscript for the article was prepared.

N. C. JONES
Michigan State Highway Department
Lansing, Mich.



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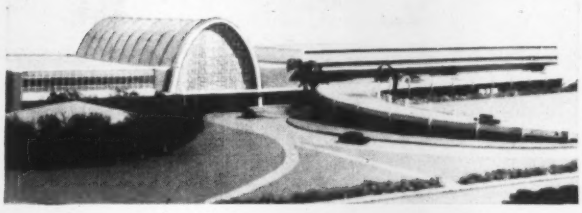

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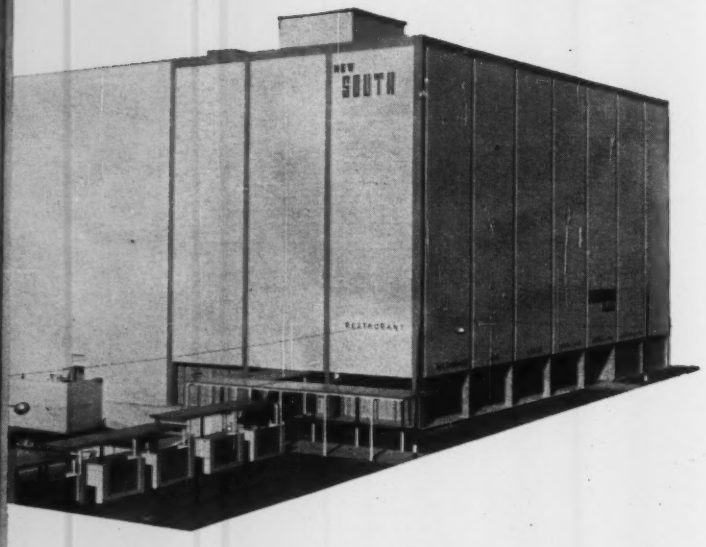
High speed at High Point earns $150,000 ...with STEEL



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H. L. Coble, president of H. L. Coble Construction Company, the contractor, credits structural steel with making it possible to meet a tough completion schedule.

The steel frame for the six-story "showcase" was completed in exactly 30 days—faster than possible with any other material.

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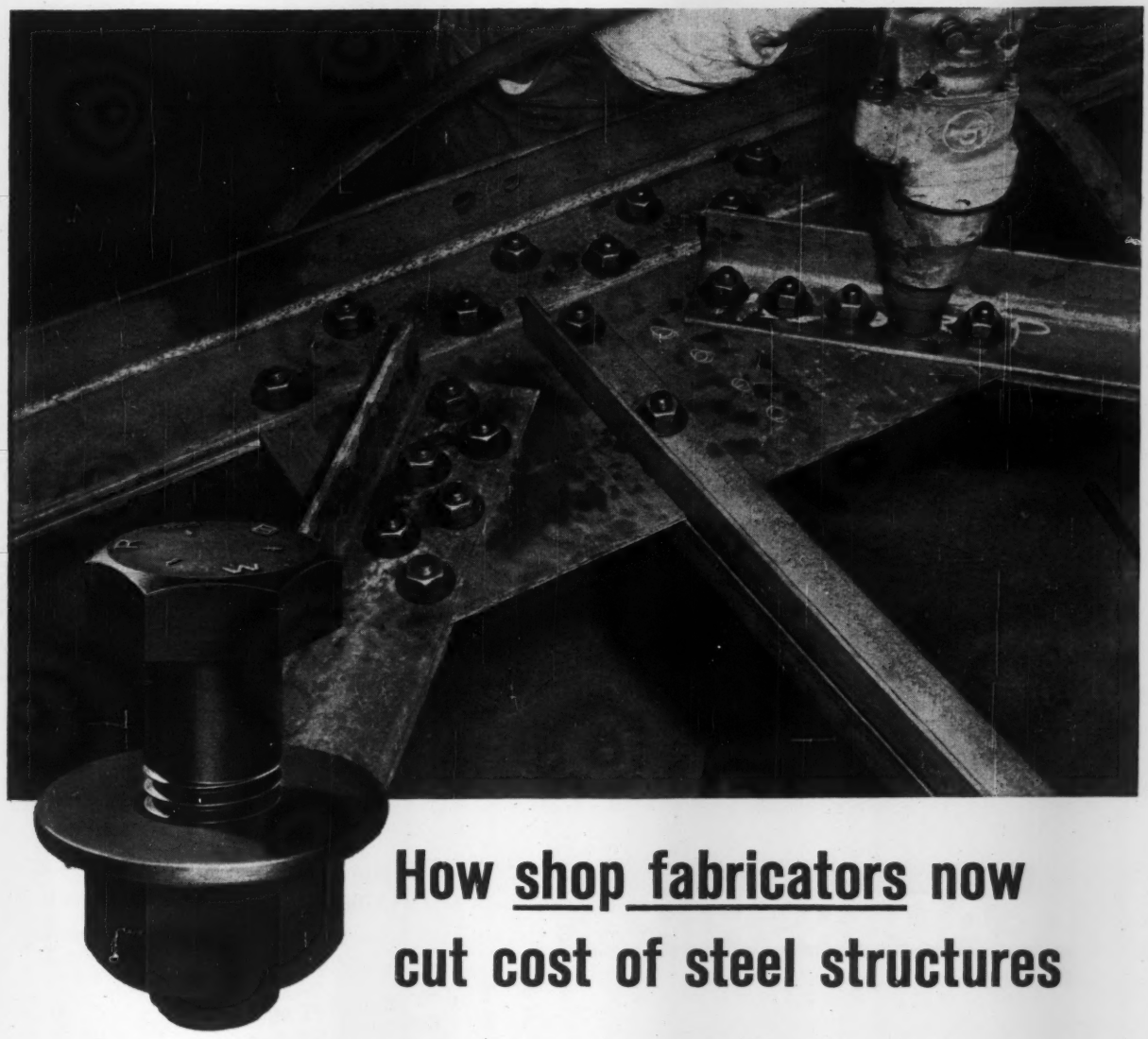

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That's because they eliminate one washer out of every two required formerly. And in bearing-type connections, two of these bolts do the work of three regular structural bolts, or three rivets. Many extra operations are avoided in punching, reaming, and filling holes. All told, the savings in bolts, nuts, and washers alone total as high as 40%. Couple this with the more efficient fabrication and movement of assemblies through the shop and you can see why *bolted* steelwork has become competitive with less desirable methods.

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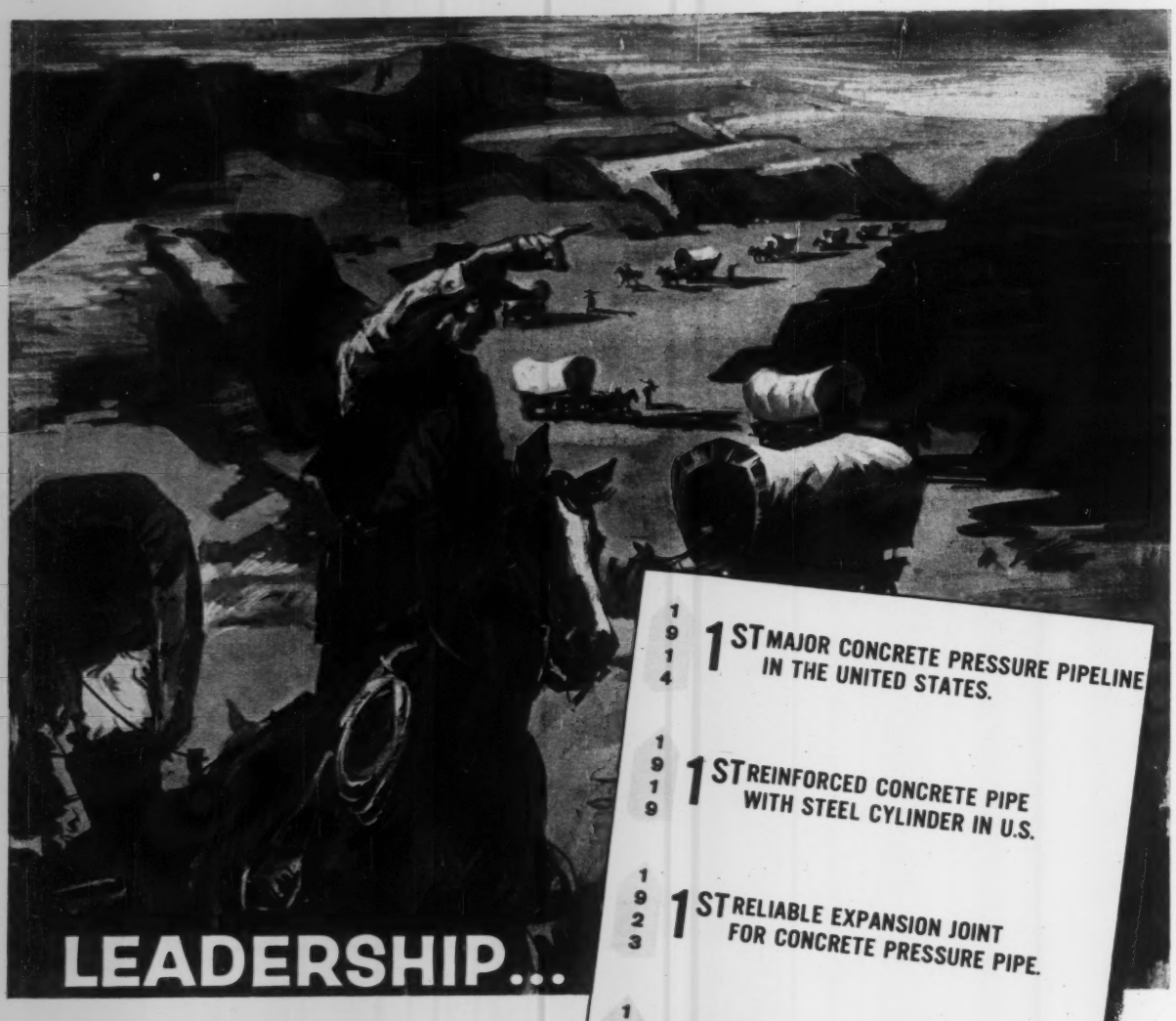

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ENGINEERING NEWS-RECORD

Vol. 166, No. 24 June 15, 1961

Number of copies printed in this issue 87,614

CONTENTS

Tax Changes Could Cripple Us..... 21
Damaged Lock Ties Up Tennessee River..... 22
Automated Interstate Highways?..... 24
Desalted Water Faces Tough Competition..... 24
Builder Gives Views on Plastics..... 25
Where Construction Bills Stand Now..... 26
From Freeway to Parking Space..... 32
Engineers Help Defeat Code Changes..... 32
Russians Get More Aswan Dam Work..... 32

FEATURES

Reaching Out for Floor Space..... 35
3-D Radar Tower Built to Close Tolerances..... 40
New Rails Cross Oregon Trail to Reach Mine... 40

NEW PRODUCTS

30 gpm With a Portable Hand Pump..... 51
Light Drill Cuts Concrete..... 51

MEN AND JOBS

Hauf Heads Design and Planning Section..... 55

BUSINESS AND FINANCE

Industry Shuns Water-Rich Site..... 75
Capital Spending Upturn Looms..... 78
Equipment Orders to Climb Later..... 78
Cowlitz Hydro Job Back in Court..... 78

LABOR

Court Rules on 'Separate Gate'..... 81
Apprentices Are Hard to Get..... 81
Hearings Set on Discrimination..... 84
NLRB Forbids Missile Boycott..... 84
Two More Unions Freeze Pay..... 84

Reader Comment... 6
Washington Observer 19
Obituaries..... 59
Unit Prices..... 61
Materials Prices.... 62
Construction Reports 65
Statistics, Indexes... 70
Editorials..... 96

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THE CONSTRUCTION WEEK

SECOND MINUTEMAN BASE TO BE BID—The Corps of Engineers will revert to traditional bidding methods for construction of Minuteman ICBM bases. The Corps' Ballistic Missile Construction Office rejected the first round of bids on the first base, at Malmstrom Air Force Base, Mont., as too high. The final contract was a negotiated, incentive-type agreement (ENR Mar. 9, p. 28). But the Corps will go back to lump-sum competitive bidding when it advertises the second Minuteman base, at Ellsworth AFB, S. D., June 27. Tentative bid opening: July 25.

QUESTION MARK ERASED—The U.S. Supreme Court has given the $80-million Fermi nuclear reactor at Lagoona Beach, Mich., a new lease on life. Rejecting violation-of-safety complaints by three unions, it refused to set aside the Atomic Energy Commission's construction permit for the reactor. The AEC acted within its authority, the court said, in granting the permit to Power Reactor Development Co.

STEELMAKING BREAKTHROUGH—A Philadelphia steel producer, Midvale Happenstall Corp., is betting over $1 million that a new steelmaking process will produce steel at a lower cost than present open-hearth furnaces. It is investing the money in a vacuum arc furnace, developed by Consolidated Vacuum Corp., Rochester, N. Y. The new furnace will turn out 60-in.-dia ingots weighing 40 tons.

U. S. TO STUDY KOUILOU? President Folbert Youlou of the Congo Republic says President Kennedy has promised to send an American technical team to study the Kouilou hydro project on the Kouilou River. As planned by the French power agency, Electricite de France, shortly after the French colony became independent, the dam and powerhouse were supposed to cost $100 million and produce 1 million kw.

MONEY SHORTAGE—Indiana's Gov. Matthew E. Welsh halted new state construction valued at $14 million because tax revenues plunged below estimates. Hit are state buildings and institutions. Highways will be unaffected, since they are constructed with dedicated funds.

Big Issue Next Week:

A 12-page Special Report: The Federal-Aid Road Program at the Five-Year Mark

plus

ENR's 2nd Quarterly Cost Report featuring highway and bridge costs

plus

A letter from Moscow, telling why their construction industry worries the Soviets

plus

All ENR's weekly news features.

"Notes from underground"

A short play on words and conduit

White hat: Boy! This tunnel is sort of airless and closed-in, isn't it? Almost like a . . . well a . . . never mind. Show me those steel raceways.

Dark hat: Right here. Been buried down here for years, but they look good as new. How do you think you'd look after being buried down here all those years?

White hat: Miserable, miserable.

Dark hat: You don't have to cover these steel raceways with any organic material when you run them through concrete, or along it.

White hat: Great! Just the kind of good, solid facts I need. Now let's get back topside, shall we?

Dark hat: You don't have to baby steel conduit, either. It takes plenty of rough handling and you can bend it without worrying about flattening or wrinkling.

White hat: About wraps it up, doesn't it? Let's go up and get some of that fresh air.

Dark hat: And steel conduit's a snap to install. You can thread it with regular dies and you don't need special lubricants.

White hat: I see.

Dark hat: Steel conduit gives you a grounded metallic system; induced currents are drained off without danger.

White hat: Let's ah . . . let's go up, huh?

Dark hat: Steel conduit's got a smooth interior, too; makes it easy to pull wires and cables, and saves a lot of time and money if you ever have to rewire. What's the matter, mister? You look all white. Maybe you ought to loosen your tie. Mister? Hey, mister?

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United States Steel Export Company, New York

America's leading steel pipe manufacturer supplying America's foremost conduit maufacturers.

This mark tells you a product is made of modern, dependable Steel.

WASHINGTON OBSERVER

- **Highway bill nears end of the road**
- **Senate pushes urban transportation**
- **Depressed areas must draw own plans**
- **Capehart housing gets another year**

● **New financing for the Interstate Highway System is nearing final congressional approval pretty much intact.** Only one trouble spot has developed. The Senate Finance Committee cut $400 million from the $9.8 billion in new revenues voted earlier by the House for the next 10 years. The Senate committee approved a smaller tax increase on tread rubber, which would lower trust-fund income by $230 million, and voted to delay a $150-million diversion from the general treasury for one year.

There is a good chance the Senate will reverse the committee action and approve the full $9.8 billion voted by the House. If not, the cut may be restored by a House-Senate conference committee. At any rate, no reductions will be required in the state apportionment of $2.4 billion to be made next month for fiscal 1963.

● **President Kennedy is embarrassed by the Senate which wants to move faster than he does on federal aid for urban transportation.** He is sending Congress a proposal to limit aid to $10 million this year for demonstration projects. Next year, after completion of a study, he plans to request a broader program, including federal loans and grants.

The Senate, in its housing bill, already has voted $50 million for demonstration projects and $100 million in loan funds. This puts Mr. Kennedy in a position of foot-dragging on a program being pushed by the big cities, which supported his election. The House is expected to cut back the Senate program.

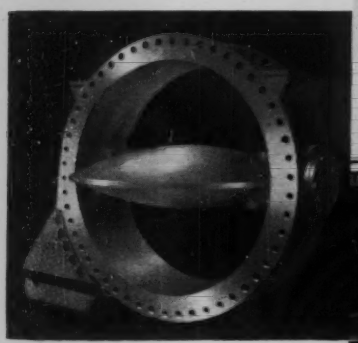
● **Next step in the government's area redevelopment program must be taken by local communities.** Commerce Secretary Luther Hodges hammered this point home at a Washington meeting of local and state representatives last week. He designated 114 labor-surplus areas as eligible for aid under the $400-million federal program. But this does not mean automatic aid, he warned.

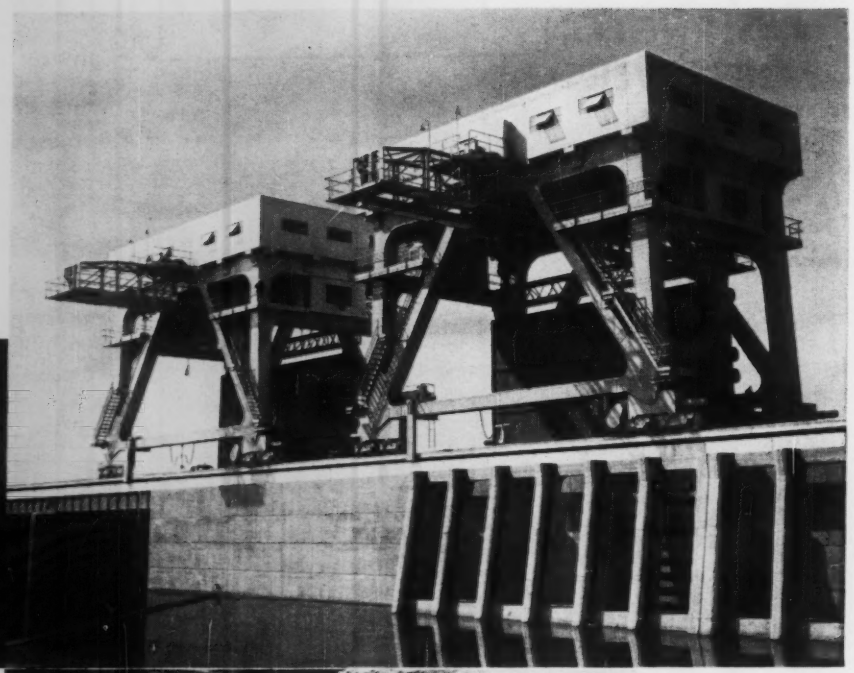
Local leaders must draw up economic development plans before specific projects can be authorized. These plans must be certified by the states involved and finally approved by Commerce's Area Redevelopment Administration. Only then can individual projects—new plants, rehabilitation of existing industries, etc.—qualify for up to 65% financing from federal funds. Only urban areas have been made eligible so far. Commerce still is checking rural areas.

● **The controversial Capehart housing program will be continued for another year.** In coming up with a compromise military construction authorization bill, House-Senate conferees approved construction of 3,000 new Capehart family housing units in fiscal 1963. They also voted authority for 2,000 housing units through direct appropriation. These will cost no more than $17,300 each.

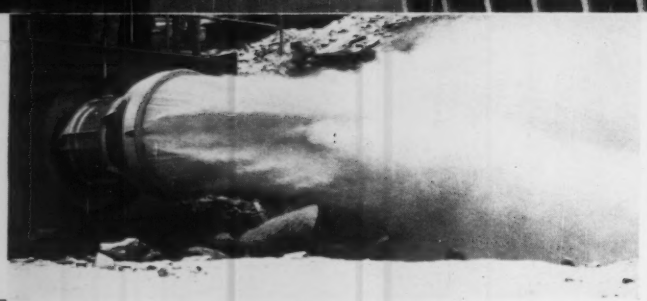
The Senate had voted earlier to halt the Capehart program. The Defense Department originally had asked for 2,025 units but the House upped this to 7,025. The conferees insisted that 300 of the Capehart units be built at Norfolk, Va. The military can choose other sites.

HEAVY ENGINEERED EQUIPMENT





...THAT MAKE DAMS WORK



Yuba supplies a complete line of heavy engineered specialty equipment for hydro, flood control and water supply projects, such as the butterfly valves, cranes and regulating valves shown above.

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H. C. Boschen (center) leads overseas constructors who tell Congress . . .

Tax Changes Could Cripple Us

The construction industry last week struck out at the Administration's recommendations for tax-law revisions. Spokesmen attacked proposals that would tax foreign-generated income of U.S. companies as it is earned and eliminate the exemption of up to $20,000 of personal income earned abroad by individuals.

Testifying at hearings of the House Ways and Means Committee were Henry C. Boschen, president of Raymond International, Inc., of New York City; and John E. Quinn, secretary of Procon, Inc., of Des Plaines, Ill.

Mr. Boschen, principal spokesman at the hearings, represented a special Construction Industry International Committee, composed of 60 engineering and construction companies. (Pictured above at left is Judson G. Hyde, treasurer of Burns & Roe, Inc., and at right, Henry Tarring, Jr., Washington representative of J. G. White Engineering Corp., both New York City companies.)

Mr. Quinn spoke for the National Constructors Association.

The congressmen were warned that forcing U.S. overseas contractors to pay taxes on income before it is received in the form of dividends would boost the industry's costs and, to a large extent, knock it out of the foreign market.

This in turn would strike hard at a large segment of the nation's businesses which obtain revenues from construction companies operating abroad, Mr. Boschen said. Extent of the purchasing power of constructors working abroad was given in his testimony. Seventeen companies reported that in the last five years they completed $2.5 billion worth of construction abroad. Their work generated more than $1 billion worth of exports; machinery, tools, materials, supplies and services.

Moreover, their activities contributed favorably to the nation's balance of payments, Mr. Boschen said. The same companies in the same period invested $22 million in new capital overseas. But they brought back to the U.S. $50 million, for a net gain of $28 million.

Competition from foreign contractors, particularly those from Western Europe continues to mount, Mr. Boschen contended, and the annual volume of 17 U.S. companies in each of the years 1956 through 1960 supports his contention. From 1956 their volume rose from $489 million to a peak of $632.3 million in 1958. But in the last two years volume fell: $426 million in 1959 and $354 million in 1960.

The foreign companies get some of their competitive weapons from their own governments, said Mr. Boschen. These include:

- Tax incentives or deferrals.
- Guarantees against commercial and political risks.
- Long-term loans.
- Currency controls that favor their own companies.

U.S. companies therefore have been forced to meet such competition by organizing foreign subsidiaries and base companies. From these come the advantages of tax deferral, guarantees against risks, closer relationships with local governments and economies, and ease of currency exchange.

To operate abroad on a sound business basis, U.S. companies must earn at least the same return on investment as the foreign competitors, but this is impossible "if we are required to pay anticipatory taxes and our competition is not," Mr. Boschen argued. What's worse, he added, "It could also result in a tax being applied where ultimately there is no profit."

Because construction is a transient operation by nature, a contractor's operating funds must be transferable to new currencies without reduction by U.S. taxation as a premature dividend, Mr. Boschen said.

And since construction earnings of-

ten are tied up in equipment located at a job site, funds are rarely available to pay annual dividends. Two courses then are left to the contractor—sell the equipment, perhaps at sacrifice prices, or borrow money, Mr. Boschen explained. Either move would result in higher costs and therefore less work for U. S. contractors.

Currency convertibility also presents problems for the U. S. contractor abroad. Mr. Boschen explained that frequently contractors must channel currencies through two or more countries, "a process that may take several years to accomplish before dollar funds are made accessible to the parent."

For this reason, dividends must be withheld and taxes temporarily deferred. Inability to defer these moves could force companies "to use dollars earned or borrowed from domestic sources to pay taxes on foreign earnings. This would reduce funds available to other industries for domestic investment," Mr. Boschen said.

Anticipatory taxation also would make U. S. companies "undesirable partners" for local foreign companies, he said. (Joining forces with local interests is often required by local law before work can be obtained in certain areas.) Equitable taxation of the U. S. partner's share of income would be complicated and thereby hamper a U. S. company's participation in such arrangements—which incidentally are also encouraged by the U. S. government.

Base companies established abroad by U. S. construction companies were strongly defended by the industry spokesman. It is not the intention of the construction industry to defend those companies who use foreign companies to evade U. S. taxes, Mr. Boschen said. "But we are concerned that the proposed tax program in an effort to eliminate the abuses of the 'tax haven' will destroy the legitimate business purposes of the foreign base company so vital if American contractors are to continue to work overseas."

The foreign base companies provide safety, flexibilty and mobility, "so vital to a successful overseas operation." A base company keeps assets at a minimum to isolate them from risks of expropriation and inequitable laws of politically unstable governments. "This allows us to take greater risks, particularly in the developed areas," Mr. Boschen said.

The testimony also hammered at the proposal that would eliminate (in all but the underdeveloped countries) the tax exemption on individual income of up to $20,000.

Mr. Boschen explained that it is already difficult for U. S. contractors to recruit highly skilled construction executives for jobs where living is difficult and unpleasant. "It would seem to us, especially now that our way of life is challenged on so many fronts, that we should be thinking in terms of personnel incentives rather than new tax burdens," he said.

He conceded that the exemption would continue for persons working in underdeveloped countries, but questioned the practicality and equitability of the idea. He argued: "It does not seem fair to offer tax incentives to a construction manager in Caracas or Rio de Janeiro—both of which are labeled underdeveloped areas—and at the same time remove the tax incentive for another living at a rugged construction site in Iceland, Spain, South Africa, Australia or New Zealand—all of which are termed developed countries."

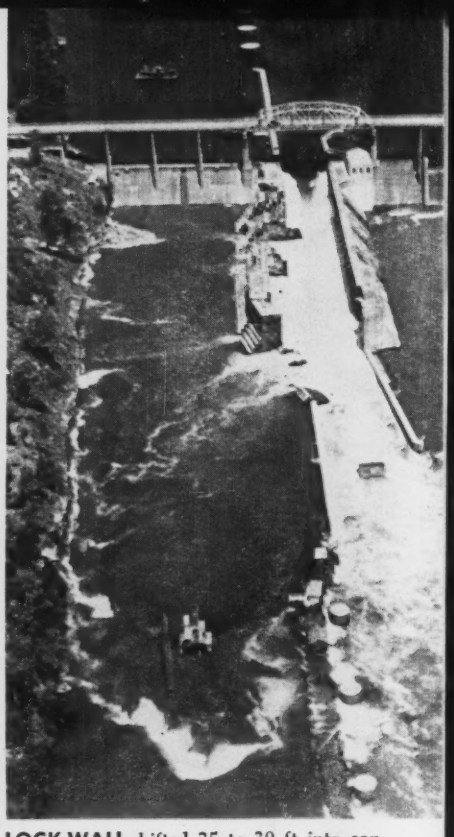
Elimination of tax incentives would force U. S. contractors to increase employee compensation to make up the difference. Supporting data showed that under present laws the individual earning $30,000 abroad "takes home" $28,364. Under the Administration's proposal he would take home $21,566. To maintain the differential under the recommendation, contractor or engineer employers would be compelled to raise the salary 50% to $45,000.

Mr. Boschen reinforced the argument with actual industry figures showing that 22 companies now employ 3,000 U. S. citizens overseas for a total payroll of more than $31 million a year. The companies estimated that they would have to boost their payroll by $7 million a year to compensate for the deeper tax bite. "To cover this increased cost, our bid prices would surely have to be raised, resulting in further deterioration of our competitive position," Mr. Boschen said.

Mr. Boschen said the industry therefore recommends that instead of eliminating the tax exemption on personal income earned abroad, the U. S. should boost it to $30,000. And neither should there be any distinction on where it is earned overseas—in underdeveloped or developed countries.

Other recommendations by the industry included:

- Recognize the necessity for tax deferral for base companies for operating purposes in foreign countries.
- Tax at U. S. rates any unreasonable accumulation of highly liquid funds not needed in overseas business.
- Enact legislation that would permit U. S. companies to establish overseas trading companies which would be taxed at rates below those now prevailing. This would stimulate export of U. S.-made equipment and services.
- Allow a U. S. foreign business company to hold or conduct a business overseas without depriving it of tax deferral opportunities as long as goods made abroad do not compete in the U. S. market.



LOCK WALL shifted 25 to 30 ft into construction excavation for new lock.

Damaged

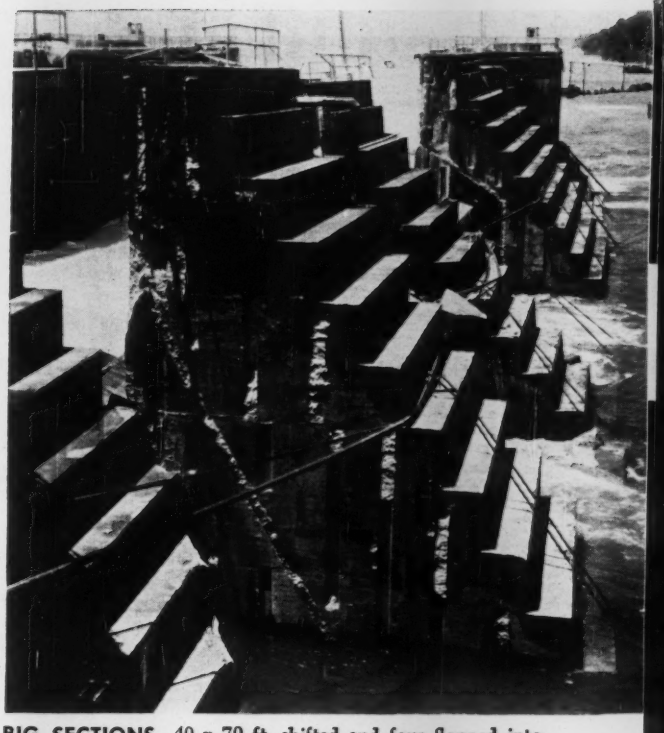
Even with 'round-the-clock repairs, it may be eight months to a year before TVA's heavily damaged Wheeler Lock on the Tennessee River is back in service. But until the 27-year-old lock is completely dewatered, TVA engineers won't be sure what caused the collapse or exactly how long it will take to repair it.

The slippage and almost total destruction of the landward wall of the 60 x 360-ft chamber occurred two weeks ago (ENR June 8, p. 28). Since then, the reservoir level was lowered, an emergency H-beam and timber bulkhead successfully installed above the upstream lock gates and the previously wedged-open gates closed.

Although closure of the upstream gates halted the 15,000-cfs torrent through the chamber, engineers won't be able to determine the cause of failure or estimate damage until dewatering is complete. This will be done by tying the intact lock wall to an existing sheetpile cofferdam (foreground, above left) with additional cells. After inspection in the dry, engineers will be able to estimate better just how long river traffic will be halted.

The slippage occurred just after a barge tow headed upstream had emerged from the lock chamber. Up-

WHITE WATER churns through 60-ft-wide, lock-turned-spillway when most of one wall slipped outward and collapsed.



BIG SECTIONS, 40 x 70 ft, shifted and four flopped into chamber. Air and water lines for excavation are at right.

Lock Ties Up Tennessee River Traffic

stream gates were still open and the lock chamber full, when several 40 x 70-ft sections of the concrete gravity lock wall shifted 25 to 30 ft into a dewatered construction site.

Ironically, just last fall TVA started work in the cofferdam to build a new 110 x 600-ft lock. The collapse flooded the entire work site and turned the lock chamber into an uncontrolled spillway after the downstream gates were torn from their hinge pins.

Of the 30 men working in the excavation, one is still missing and presumed dead. Five others were hospitalized. One crewman from a barge, waiting to lock-through, was also killed.

Wheeler Lock is located in the northwest corner of Alabama on the Tennessee River. The Tennessee is highly canalized due to the many TVA dams. After the Wheeler failure TVA went to work manipulating river levels to maintain Wheeler Reservoir at minimum pool. Dams above Wheeler cut back spillway discharges, dams downstream stepped up flows. Wheeler's powerhouse and spillway discharges were boosted to 150,000 cfs, including discharge at the lock, and the 20-mile-long lake was lowered seven feet.

In some respects, the immediate problems of what caused the failure and how to repair the damage are overshadowed by gloomy forecasts of economic strangulation for cities like Knoxville and Chattanooga. These upstream cities depend heavily on river commerce. The Wheeler collapse may mean a year-long blockage on a river that handles 3 million tons of cargo annually.

Early this week TVA officials met with oilmen, grainhaulers, asphalt producers and others to tackle the problem. A preliminary check shows at least 100 barges and eight tow boats are stranded upstream from Wheeler.

For bulk dry commodities, such as grain, the most likely solution is a system of conveyor belts or buckets to shift materials over the 70-ft-high dam. Barge lines that haul liquids, such as petroleum products, have dealt with similar tie-ups by using flexible pipelines either over or around the dam.

The conveyor and pipeline systems would involve considerable expense, but surprisingly few engineering problems. The concrete gravity dam has a clear 1,600 ft section free of spillways, gates and generating equipment.

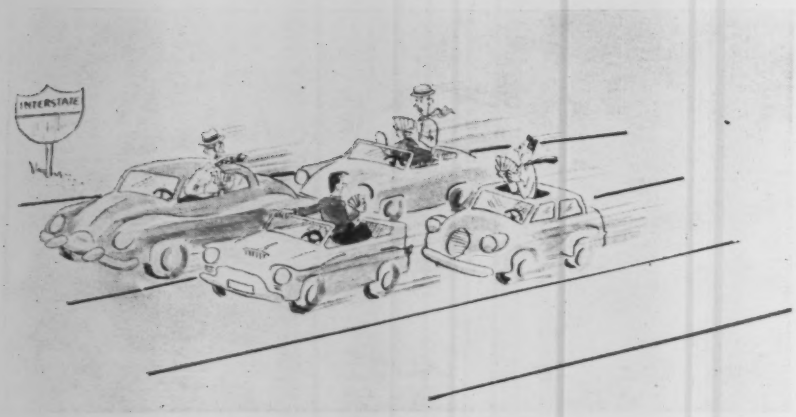
This portion of dam would be a logical location for cargo-transfer equipment. Moorings for barges would be needed on the downstream side and some dredging would be necessary.

As though the commercial shipping tie-ups weren't enough, the Wheeler failure has cold-war, space-race implications. Among the many commodities stranded upriver from Wheeler is the nation's huge Saturn rocket booster. The Saturn's first stage is 82 ft long and 22 ft in diameter. The 60-ton rocket is both too heavy and too bulky for airlifting, and highway travel to Florida would be impractical if not impossible.

The National Aeronautics and Space Administration had built a special covered barge to haul Saturn to Cape Canaveral. Now both the booster and the barge are stranded at Redstone Arsenal 50 miles above the dam.

So as TVA huddles with shippers in Knoxville this week, space officials are conferring with the Corps of Engineers about alternate methods of getting Saturn to the low side of Wheeler dam. Saturn should sail from Huntsville by next month in order to blast off from Cape Canaveral this fall.

There are two feasible routes for bypassing the dam. Both present problems. Saturn could be barged down to the dam, trailer-towed around the dam and reloaded on a downstream barge. Or it may be taken on a specially built transporter along a 65-mile back-road route to below the dam.



Automated Interstate?

Drivers on a 100-mile length of the Interstate Highway System may simply tune their cars in to electronic controls and set back for an "automated" ride.

The Kennedy Administration is contemplating—and probably will take—a step that promises to open a new era in highway engineering and traffic control. It is considering putting up the money for construction of the nation's first experimental "automated highway."

An automated highway is one which would not only provide a traveling surface but also drive the automobiles that use it. An electronic control system built into or alongside the highway would relieve motorists of driving responsibility and provide automatic guidance for their vehicles, piloting them along the road at fixed speeds and intervals.

A traffic control system of this type would make possible two major gains: a sharp increase in highway capacity, coupled with a sharp decrease in the danger of accidents. Cars could be packed on such a highway virtually bumper to bumper and propelled in an even flow at relatively high speed without danger of collision.

Administration officials already have been advised that the electronic highway is far more than a research dream. In a memorandum to the White House, the Commerce Department and the Budget bureau, a group of experts advising the Administration on transportation policy reported that enough work has now been done on automatic traffic control by private industry and university researchers to conclude that it is technologically feasible.

By June 30, a specific proposal will be made: That a 100-mile stretch of yet-to-be-built Interstate highway between two major cities be selected for the experiment. This, in all probability, would be a six-lane highway which could accommodate electronic traffic control on one lane in each direction, leaving the remaining two lanes in each direction free for conventional driving.

The group will recommend that the Bureau of Public Roads fix the specifications for such a system and call for competitive bids from private industry. A number of firms already have done considerable work on electronic traffic control, among them: Radio Corporation of America, Thompson Ramo Wooldridge, Bendix, Westinghouse, and General Motors.

The experimental system would not go into operation for two years at least. The successful contractor would be required to "debug" his system on an off-highway test course while construction of the Interstate segment is proceeding.

Chances are that the Administration will decide to accept the advisory group's recommendation. There is a strong feeling that it is folly for the federal government and the states to pour $41 billion into an Interstate Highway System being built to 1975 standards without incorporating into it all feasible technological innovations.

The Administration also will be asked to consider a second-phase installation of electronic traffic control on a 10-mile stretch of urban expressway. Concurrently with this, more effective, but not automatic traffic control, would be tried on a group of ordinary heavily traveled city streets. This probably would involve television scanning from a master control point (as is being done in Detroit). Warnings of traffic tieups, accidents, suggested speed and alternative routes would be communicated to drivers via car radios or electric signs.

Initially, cars would not be required to be equipped with special equipment to use electronic roadways. Attachments would be provided for the vehicle which would accept electronic signals that would regulate acceleration, braking and steering.

Desalted

Delegates to the American Water Works Association's annual meeting in Detroit last week heard the first report from the association's new Saline Water Conversion Committee. The group reported that:

- Conversion of brackish water by electrodialysis is the desalting area of top immediate interest and usefulness to the waterworks profession.
- For large cities, impoundment and transmission costs for surface water are so low as to constitute almost insuperable competition for saline water conversion.
- Sewage instead of brackish water should be considered as a raw water source for conversion systems.

The committee dealt only with brackish water in the report. It termed utilization of the "vast underground reservoirs" of brackish waters in North America "the issue of greatest contemporary significance to the members of the AWWA." The group will consider sea water conversion in later reports.

The committee considers water brackish if it contains from 1,000 to 10,000 parts per million of dissolved solids. About one in five waterworks has raw water supply in this range. The group surveyed 20,215 municipal waterworks in 48 states and five Canadian provinces and found that dissolved solids in the raw water supply of 1,066 ranges from 1,000 to 3,000 ppm and of 31 others, from 3,000 to 10,000 ppm. Principal areas involved are the southwestern and north central parts of the U. S., the Gulf and Florida coasts and the prairie provinces of Canada. The problem is of major concern or ought to be, the committee says, in Minnesota, Iowa, Montana, the Dakotas, Saskatchewan, Oklahoma, New Mexico, Arizona and California.

Major factors in the current importance of electrodialysis treatment of brackish water, says the committee, are low desalting costs, low pumping and transmission costs, and low contamination.

Electrodialytic treatment of brackish water costs less than sea water conversion by any method, the committee says. The report cited a present cost range of 20 to 60 cents per thousand gallons for electrodialytic treatment of brackish water with 1,000 to 5,000 ppm of dissolved solids under reasonably favorable conditions. A cost range only half that high seems likely within three years for plants of 1 million to 10 million gallons a day capacity, the committee believes. The cost probably won't run much higher for plants producing only a few hundred thousand

Water Faces Tough Competition

gallons daily, says the report. In contrast, sea water conversion now is costing $1.50 to $2 per thousand gallons and will still cost 50 cents to $1 after predicted reductions in cost, says the committee.

Evaporation methods are most commonly used to desalt sea water, but the committee reports that the only feasible evaporation process for inland areas where feed supply is limited (wells) seems to be vapor compression. Unlike flash evaporation, it has a high ratio of output to feedwater. This is important both because it requires less feed and because it produces a smaller volume of waste brine to be disposed of. This method also drops in cost with low solids content in the raw water, a less important factor in flash evaporation.

The committee pointed out that dilution of the distillate with raw water may be an important factor in appraising evaporation methods. Since the distillate is usually of a high degree of purity, raw brackish water can sometimes be added in considerable quantity without raising the solids content of the mixture beyond allowable limits. For example, with 2,000 ppm of solids in the raw water, zero solids in the distillate and 500 ppm allowable in the distributed product, one part raw water could be added to three parts distilled water with a consequent 25% overall cost reduction per thousand gallons.

The group reported certain advantages of using sewage rather than brackish water as the raw water supply. It might alleviate an existing disposal problem instead of creating a new one, the report suggested. Evaporation would lend itself well to this system since it is less sensitive than other processes to wide variations in feedwater chemical composition and contaminants.

The committee reported that many critical water-short areas could supply their needs by desalting brackish water from wells close at hand without prohibitive transmission or pumping costs. But the transmission cost drops so sharply with increase in quantity that big cities can afford to pipe water many times as far as small towns without increasing the unit cost. The report cited this example: For $1 per thousand gal, 100 million gal a day could be transmitted 1,000 miles; 10 mgd, 300 miles; 1 mgd. 100 miles; 100,000 gal per day, 30 miles; and 10,000 gpd, 10 miles.

The report emphasized that desalting costs quoted compare only to the costs of impoundment, transmission and (in some cases) part of the treatment of water from conventional sources. Before comparing over-all delivered costs on an equal basis, the costs of distribution, accounting, billing, etc., must be added.

However, there may be hidden costs in conventional supply, the report warned. If the source is highly mineral, the consumer may be paying more than the billed price in the form of bottled drinking water, home softening, corrosion and excessive consumption of soaps and detergents.

Detergents got the spotlight in another paper at the five-day meeting. Mrs. Lynn Miller, chemistry and biology professor at Mary Manse College, Toledo, Ohio, and her associate, Sister Mary Raphael, drew sharp disagreement with their report on tests showing that 25 liquid and solid detergents now on the market support the growth of harmful bacteria. P. J. Weaver, of Procter & Gamble, Cincinnati, and Richard L. Woodward, chief of engineering at the U. S. Public Health Service's Taft Sanitary Engineering Center, Cincinnati, said their tests on detergents have turned up no evidence to support Professor Miller's findings.

Builder Gives Views on Plastics

What does a contractor think of plastics in buildings? The plastics industry heard the answer last week from George P. Dorrance, director of technical services, Turner Construction Co., at a meeting in which building code problems of plastics also were aired.

Speaking at the Annual Plastics Convention in New York City sponsored by the Society of Plastics Industry, Inc. (SPI), Mr. Dorrance outlined his company's experience with plastics:

- The polyvinyl water stop for basement walls and floors is a "truly excellent application and solves a long-felt need." But when polyvinyl is used as divider strips for terrazzo it shows cigarette burns, suffers abrasion damage.
- Epoxies as bonding agents for concrete and terrazzo floors make possible construction that was formerly impossible; but "we need to know much more about their uses and how to handle them."
- Plastic facings on plywood forms for concrete give excellent surfaces, but cost is higher than for standard coatings.
- Although rigid polystyrene combined with Foamglas provides satisfactory lightweight insulation on roofs, combustibility is cause for concern.
- Protective coatings of acrylic lacquer on metal are a big step forward.
- Temporary windows of polyethylene are light, economical and offer the decided advantage of transparency—but are easily damaged.
- Polysylphide glazing compounds arrived just in time to help seal the modern curtain wall.
- Saran-type resin has been very successfully applied in flashing 256 roof sections that had to be set between steel girders of an airplane hangar.

Mr. Dorrance summed up his experience with plastics by stating that the builder finds plastics very complex and needs help in understanding them. Major disadvantages of plastics in general, according to Mr. Dorrance, are the large coefficients of expansion and poorly defined fire-resistance characteristics. Major advantages: Plastics are tough, colorful, flexible and offer low maintenance. And they work well in conjunction with other materials.

• **The code barrier**—Plastics manufacturers sitting in on the three-day conferences, held in conjunction with the Ninth National Plastics Exposition at the New York Coliseum, were also told point blank that they were selling their products the hard way. Paul E. Baseler, executive secretary of the Building Officials Conference of America (BOCA), summed up BOCA's experience with plastics as "disappointing at best."

Mr. Baseler explained: "Basically, the trouble seems to be that the plastics industry is going about the introduction of its products the hard way. Each manufacturer is trying to introduce his product indepentently. . . . There is no industry-wide standardization."

F. J. Rarig, secretary, Rohm and Haas Co., suggested that plastics manufacturers could help those who write building codes by defining plastics better.

"Plastics denote too little and connote too much," he said. For example, there is no real comparison between 7-mil-thick and 7-in.-thick material. It's up to the manufacturers to give regulatory officials more specific data.

Speaking from the public official's view, Leo Goldstein, staff engineer for the City of Philadelphia, told the plastics makers that a public department is seldom in the position to initiate code changes. And because red tape chokes off changes that would solve immediate problems, local people often tire of trying to revise codes. Mr. Goldstein concluded that only a professional organization, such as SPI, is properly qualified to present all the information needed to stimulate code changes.

Where Construction Bills Stand Now

Housing Progam: $3.2-billion bill covering new mortgage insurance programs including low down-payment, 40-year home loans, public housing, urban renewal, home rehabilitation loans, housing for elderly, college construction.
Status: Passed Senate; House vote expected within two weeks.
Outlook: Certain, for most provisions.

Interstate Highways: No change in schedule, continue four-cent gas tax and raise truck taxes to finance more than $9 billion for additional highway construction.
Status: Passed House; Senate action this week.
Outlook: Certain.

Foreign Aid: $4.5-billion request, plus authority to make long-term commitments.
Status: Hearings under way in both houses.
Outlook: Stiff opposition to long-term commitments which bypass appropriations committees of Congress. Amount may be trimmed, too.

School Construction: $2.5-billion grant program for public school construction and teachers' salaries.
Status: Passed by Senate; House expected to vote next week.
Outlook: Passage by a very narrow margin is expected by proponents.

Military Authorization: Authorizes between $800 million and $900 million for military construction in fiscal '62, with emphasis on missile bases.
Status: Passed by Congress, ready for Presidential signature.

College Classroom Construction: $180 million a year grants for construction of college classrooms, $120 million in loans for five years.
Status: Passed by House committee.
Outlook: Favorable.

College Housing Loans: Increase $1.6-billion revolving fund for college housing loans to $2.8 billion over six years.
Status: Part of omnibus housing bill passed by Senate.
Outlook: Very favorable.

Urban Affairs: Create a Department of Urban Affairs and Housing.
Status: Further House hearings are scheduled.
Outlook: House committee approval expected this year; chances for passage next year are favorable.

Minimum Wage: Raise minimum to $1.25 in two stages, extend coverage to 3.6 million workers, including 1 million construction workers.
Status: Passed by Congress and signed into law.

Depressed areas: $451-million federal grant-loan program to help depressed areas attract industry.
Status: Passed by Congress and signed into law.

Situs Picketing: Permit unions to picket entire construction site in dispute with single contractor on project.
Status: Passed by House subcommittee.
Outlook: Chances negligible.

National Labor Relations Board Reorganization: Speed up procedures by delegating authority to regional branches.
Status: House hearings are now in progress.
Outlook: Very favorable. Becomes law in 60 days unless vetoed by Congress.

Tax Revision: Tax credits to stimulate plant investment with offsetting revenue measures such as withholding on dividents, tighter expense accounts.
Status: House hearings are now in progress.
Outlook: Poor.

Retirement Tax Credits: Tax deduction to self-employed for money spent on retirement plans.
Status. Passed House.
Outlook: Senate unlikely to approve it.

Delaware River Compact: Establish four-state commission to control water development on the Delaware River and its tributaries.
Status: Passed by House committee.
Outlook: Congress will probably pass it but the President may veto it.

Frying Pan-Arkansas Project: $170-million water and power project diverting water from the Colorado River to the Arkansas River through a six-mile tunnel.
Status: Passed by House subcommittee.
Outlook: Fair.

Airport Construction: $75 million annually for five years in aid to airports. 50-50 matching funds for runways.
Status: House subcommittee will vote soon.
Outlook: Favorable.

Congress heads into the summer weeks with the Kennedy legislative program making substantial progress.

Chances are that most of the President's program will be sent to the White House for signature by early August in one form or another. Measures that may drag Congress on into September session, however, include such sticklers as the foreign aid and farm programs.

The Senate this week voted President Kennedy most of what he wanted in a multi-billion-dollar omnibus housing bill:

- Forty-year mortgages — Approved this feature, but insisted on keeping the same down payments that now apply to FHA loans: 3% on the first $13,500, 10% on the next $4,500.
- Low-cost rental housing—Loans below the market rate (but not below 3½%) to non-profit organizations to build rental housing for persons whose income is a little too high to qualify for public housing.
- $2.5 billion for urban renewal grants, expected to be withdrawn from the treasury at the rate of about $600 million a year for four years.
- Authorize construction of $100,000 more units of public housing.
- $1.35 billion over five years in loans for college housing. The revolving fund now stands at $1.6 billion, all of it already committed.
- $50 million in loans to communities for public facilities. Past authorizations total $150 million.
- $50 million in loans for housing for the elderly. This will double the present program.

A mass transit program promoted by Sen. Harrison Williams (D., N. J.)—but not endorsed by the Administration—is also included. It would provide $100 million in loans to communities for mass transit facilities and allow some of the urban renewal money to be used for studies of mass transit problems.

The other major Kennedy program in the domestic welfare field is now ready for consideration.

The school construction bill seems close to approval. The Senate already has passed it. House managers believe they can get it through by as many as a dozen votes—and before July 1.

Both Senate and House bills provide $2.5 billion in grants over a three-year period for construction and teachers' salaries. Both would allocate more money to the needier states on the formula involving the number of school children and per capita income. Formulas differ somewhat but are regarded as nothing that cannot be straightened out by a Senate-House conference.

Plan your entry now, for THE 4th ANNUAL ALFRED A. RAYMOND AWARD

$1,000

WHAT IT IS

The sum of one thousand dollars is awarded annually for the original paper which is adjudged the most valuable contribution in advancing the field of foundation engineering, as related to foundations for structures.* The previous awards: *A New Technique for Stabilizing Compressible Soils, by Martin S. Kapp, Engineer, Port of New York Authority, New York City (1958); Lateral Stability of A Flexible Pier, by M. T. Davisson, Instructor, University of Illinois, Urbana, Ill. (1959); Pile Heave and Redriving, by Earle J. Klohn, Engineer, Ripley and Associates, Vancouver, B.C. (1960).*

WHO MAY ENTER

Construction and other practicing civil engineers, engineering faculty, graduate students, and undergraduates are eligible.

THE JUDGES

The judges for this year's competition are: Frank A. Marston, Partner, Metcalf & Eddy, Consulting Engineers, Boston, Mass.; William W. Moore, Partner, Dames and Moore, Consulting Engineers, San Francisco, Calif.; Jorj O. Osterberg, Professor of Civil Engineering, Northwestern University, Evanston, Ill.

A MESSAGE FOR ENGINEERS

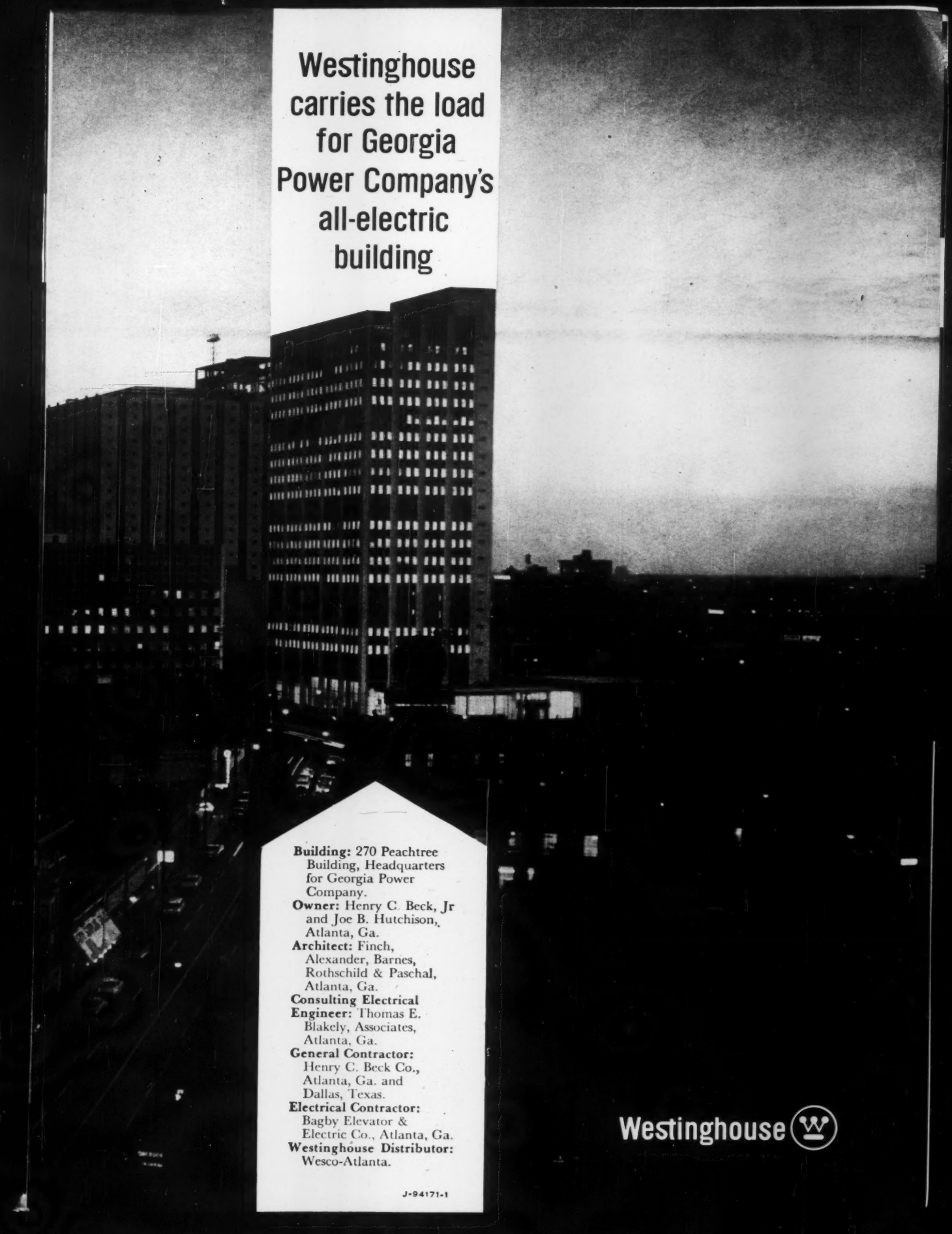
"In order to be well prepared for his professional duties the young engineer should be thoroughly familiar with the present status of our theoretical knowledge in the field of foundation engineering, but it is equally important that he should be aware of the limitations of theory and the need for reducing the width of the gaps in our knowledge of the empirical aspects of the subject by conscientious observations in the field. In my opinion the Alfred A. Raymond Award is eminently suited to encourage such a mental attitude and to cultivate the precious gift of intellectual curiosity."

—K. Terzaghi

For copy of the rules and regulations, write Alfred A. Raymond Award, Dept. E-3, Room 1412, 140 Cedar Street, New York 6, N.Y.

*Entry of manuscript does not preclude subsequent publication.

The Alfred A. Raymond Award competition is sponsored by the Raymond Concrete Pile Division of Raymond International Inc.



Westinghouse carries the load for Georgia Power Company's all-electric building

Building: 270 Peachtree Building, Headquarters for Georgia Power Company.
Owner: Henry C. Beck, Jr and Joe B. Hutchison, Atlanta, Ga.
Architect: Finch, Alexander, Barnes, Rothschild & Paschal, Atlanta, Ga.
Consulting Electrical Engineer: Thomas E. Blakely, Associates, Atlanta, Ga.
General Contractor: Henry C. Beck Co., Atlanta, Ga. and Dallas, Texas.
Electrical Contractor: Bagby Elevator & Electric Co., Atlanta, Ga.
Westinghouse Distributor: Wesco-Atlanta.

J-94171-1

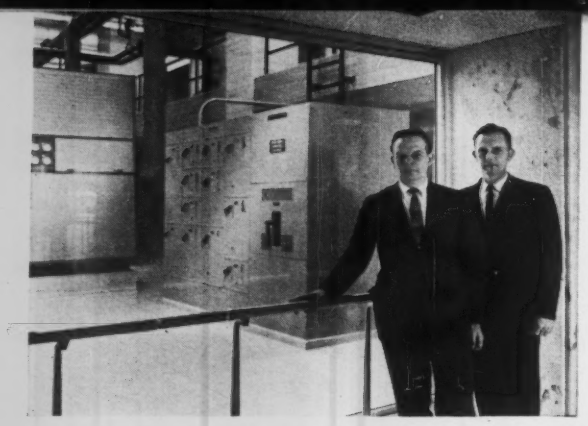
Westinghouse

Georgia Power Building

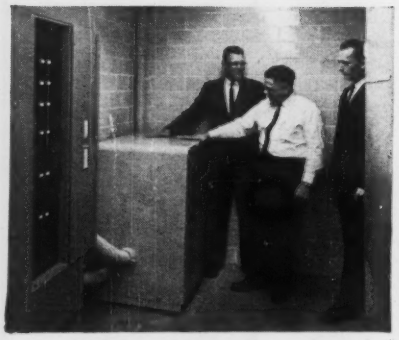
Atlanta

Designed with an all-electric concept, the 22-story **270 Peachtree Building**—Atlanta's newest skyscraper—serves as headquarters for the Georgia Power Company. Some of the electrical statistics:

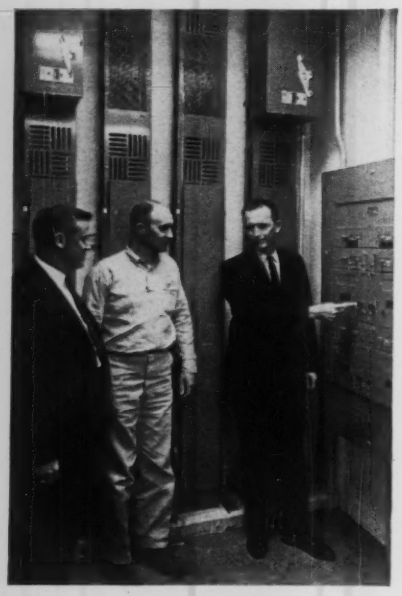
Service voltage—266/460
Service entrances—Two 4,000 ampere bus duct runs
Main breakers—Two 4,000 ampere, parallel
Connected load—8,000 kilowatts
Estimated demand—4,035 kilowatts
Air conditioning—1,000 tons (two 500-ton units)
Ninety kilowatts of lighting per floor
Eighty-seven kilowatts resistance heating per floor
Total electric load—23 watts per square foot in office areas



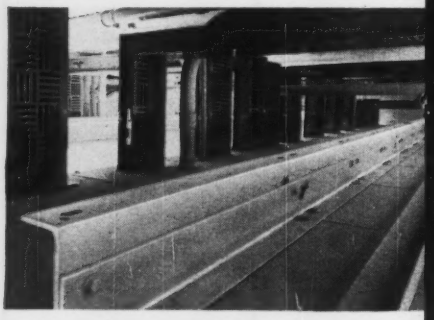
C. A. Alexander, Architect, and Earl Blakely, Consulting Engineer, shown in the handsome lobby of the Georgia Power Headquarters office building. Lobby was designed to showcase mechanical and electrical equipment and stress the importance of electrical services in modern office building operation. Westinghouse motor control center at right groups combination starting units into one structure affording flexibility, accessibility and safety. Modular construction features tilt-out design to isolate starters from bus for extreme safety in maintenance and inspection. This motor control center controls and protects mechanical room pump and fan motors.



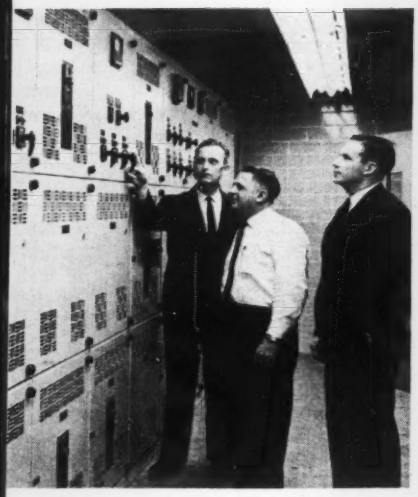
Discussing the low case temperature of a 300 KVA type DT-3 dry-type transformer are J. W. Tysinger, Westinghouse Sales Engineer; T. E. Luther, Building Superintendent and Earl Blakely. Silicone insulation in this class H (150°C) transformer offers greater resistance to heat . . . provides a greater range of safety for overloads . . . thus prolongs transformer life. This transformer steps 480 volts down to 120/208 wye for distribution. Westinghouse convertible type CDP panelboard at left contains De-ion® circuit breakers for positive protection against short circuits and over-loads.



J. E. Chambers; O. U. Moore, Jr., Contractor Job Superintendent; and Earl Blakely, discussing a Westinghouse motor starter panel. Two such panels are located on each of the building's 22 floors to control supplementary perimeter heaters. New motor starter panels afford grouping when a small number of circuits are to be controlled. Low-impedance bus duct runs at rear feed electric heating. Bolt on power take-off devices limit high fault currents available in the system, protecting all electrical devices.



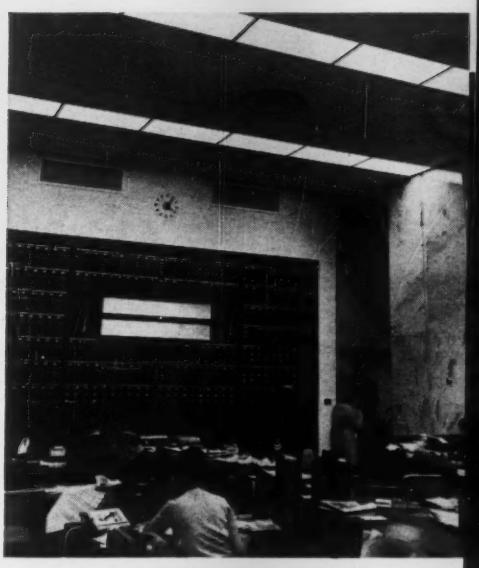
Top view of low-voltage switchgear shows two runs of 4,000-ampere low-impedance bus duct handling incoming power and nine 800- to 1600-ampere feeder runs. Six of these runs serve as vertical rise feeders that carry full power to all building loads. Bus duct was specified for its flexibility for future load growth additions . . . also, bus duct has a lower installed cost than cable or conduit. A high degree of coordination was necessary on this job to insure equipment match-up. Westinghouse provided this coordination in a complete line of quality equipment.



Earl Blakely, T. E. Luther and J. R. Miller, Westinghouse Construction Engineer, discuss metering on main assembly of metal-enclosed low-voltage draw-out switchgear. Incoming power is fed into two main DB 100 air circuit breakers. Electrically operated DB-50 breakers serve as feeders and another is used as a tie breaker so that entire board may remain energized during emergency. Current limiting fuses are mounted in series with all breakers to protect against high fault currents available. Westinghouse DB breakers were specified, since so much of the building load is fed from each breaker that dependable service from a heavy-duty breaker is an absolute requirement.

J. E. Chambers, Vice President, Bagby Elevator & Electric Co., and H. H. Cook, WESCO, inspect a Westinghouse Life-Line combination starter. A convenient start-stop button is mounted in the cover of this size 1 Class 11-206 combination starter designed for across-the-line voltage starting. A type AB-I 100 ampere circuit breaker is mounted at right. This breaker utilizes the De-ion principle of arc extinction which stretches and extinguishes an arc faster, with less contact temperature rise than any known system.

J. J. McDonough, President, Georgia Power Company and A. H. Wade, Jr., Manager, General Services Department, entering one of six high-speed Westinghouse Selectomatic® elevators located in the building. Comfortable cars are finished in white decorator Micarta® and are equipped with intercom and music. They serve this 22-floor building quickly and efficiently at 800 feet per minute.



Lobby floor office area of Merrill, Lynch, Pierce, Fenner and Smith, comfortably illuminated by 2′ x 4′ Westinghouse Mainliner fluorescent fixtures. Mainliners are available in a variety of sizes and mounting arrangements with a full line of shielding media for complete flexibility. In this installation Owens Corning Polarizing Panel shielding was utilized to eliminate glare on the automatic stock board.

Specify Westinghouse for completeness of product line . . . for complete service—before, during and after construction . . . for complete dependability. *You can be sure . . . if it's Westinghouse.*

Westinghouse

J-94171-2

Proposed multi-level system would allow motorist to go directly . . .

From Freeway to Parking Space

Los Angeles civil engineering consultant E. M. Khoury has proposed a provocative solution to the twin problems of traffic congestion and parking that plague American cities. His plan involves systematic execution of a master plan for traffic and buildings over a long period of time.

Mr. Khoury explained his idea at a recent public hearing set up by Milton Brievogel, Los Angeles County planning director.

The consulting engineer points out that traffic troubles in many urban areas stem from freeways emptying a heavy load into narrow downtown streets. His proposal is that freeways be "knifed through" the downtown area on elevated highways at selected block-wide intervals over the present street grid. These elevated extensions of the freeway system would feed directly into combination multi-level garages and office structures, built around the elevated highways. This would create a second independent traffic system over existing ones, and if necessary a third and fourth above that (freeway would enter into garage-office structure at fourth-floor level—later, if needed, at eighth-floor level and so on).

Basis for Mr. Khoury's idea for multi-level freeways is expansion of his design for a rampless, multi-story garage covering a city block. He developed this garage design in 1957, and now has a patent on it.

Mr. Khoury's garage contains no ramps of the conventional type, and the exterior has horizontal lines on all sides. Secret of design is a warped-floor arrangement—center section of each floor is warped so it connects with floors immediately above and below it. Outer periphery of each floor is perfectly level and suitable for either parking or office space. The warped surface is actually a hyperbolic paraboloid—a curved surface constructed with a series of straight lines in two directions. And since these decks are made up of straight lines, they can be built of either steel or reinforced concrete.

The freeway is tied into a grid composed of several bands of combinations of these warped-floor structures. Warped-floor structures would house offices, elevated pedestrian walks, parks and parking areas in addition to providing different levels and convenient interchanges for freeways. His plan permits individual parking access within a block of destination anywhere in the downtown area.

His plan is not intended to be executed all at once by tearing down everything in its path and rebuilding immediately. In master planning for the idea, all future structures in an area to be redeveloped would have to provide the same floor elevations at lower levels. Also, a parking area would have to be located in the interior of every structure in lower levels and a standardized system used for traffic flow to and from various levels. Each new development locating in these areas would function with existing street traffic and continue to do so until a number of links in the chain have been completed. Once a band has been developed in this manner, it can be linked together and then tied into exterior freeways. Buildings between bands would be just as they are now—bands would only affect one-third to one-fourth of a city.

Engineers Help Defeat Obstructive Code Changes

Engineer backers of St. Louis' newly adopted performance-standards building code played a major role in repulsing an effort to burden the code with restrictive specification-type amendments.

Upon advice of local engineers, Mayor Raymond R. Tucker last week vetoed a controversial amendment passed by the Board of Aldermen. The board previously had defeated four other proposed amendments sponsored principally by building trade unions.

The vetoed amendment would have restored some provisions of the old code. As interpreted by two electrical engineers opposing it, the amendment would have entailed more extensive use of metal conduit for electrical wiring, expanded code jurisdiction over minor electrical repairs, and "needless expense" in wiring control units.

The St. Louis Chapter of the National Electrical Contractors Association defended the amendment, which had been sponsored by the local unit of the International Brotherhood of Electrical Workers.

In his veto message, Mayor Tucker cited advice from experts in the electrical field that the new code conformed with the 1959 National Electrical Code.

The mayor urged the city's aldermen to pass an amendment that had been referred to the Public Safety Committee. This amendment adds a schedule of inspection fees and charges to the electrical section of the code, correcting an inadvertent omission when the code was enacted.

UAR Signs With Russians For More Aswan Dam Work

The United Arab Republic and Russia will sign contracts this month for more construction at Aswan too technical for the Egyptians.

The contracts include: underwater work on the rockfill cofferdams; dumping and sluicing sand to fill the voids in the rockfills (ENR Feb. 23, p. 32); placing the thick dune-sand shell on the cofferdams; grouting operations on the dam, cofferdams, diversion tunnels and powerhouse; and the injection work on the vertical grout curtain under the 53-million cu yd rockfill.

Contracts will also be signed for driving and lining the six diversion-power tunnels, lining the headrace and tailrace canals, and construction of the powerhouse structure. Also the Russians will supply and erect bulkhead gates, sector gates and stop logs for the tunnels.

The High Dam Executive Organization reports 1.3 million cu yd of granite excavation so far. Russian equipment shipments are ahead of schedule.

BUILDINGS UNPRECEDENTED

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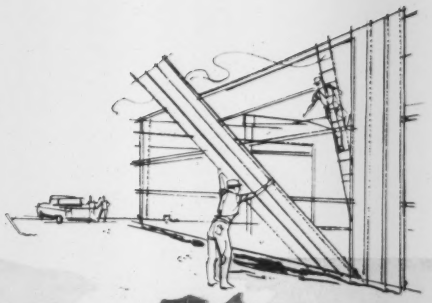

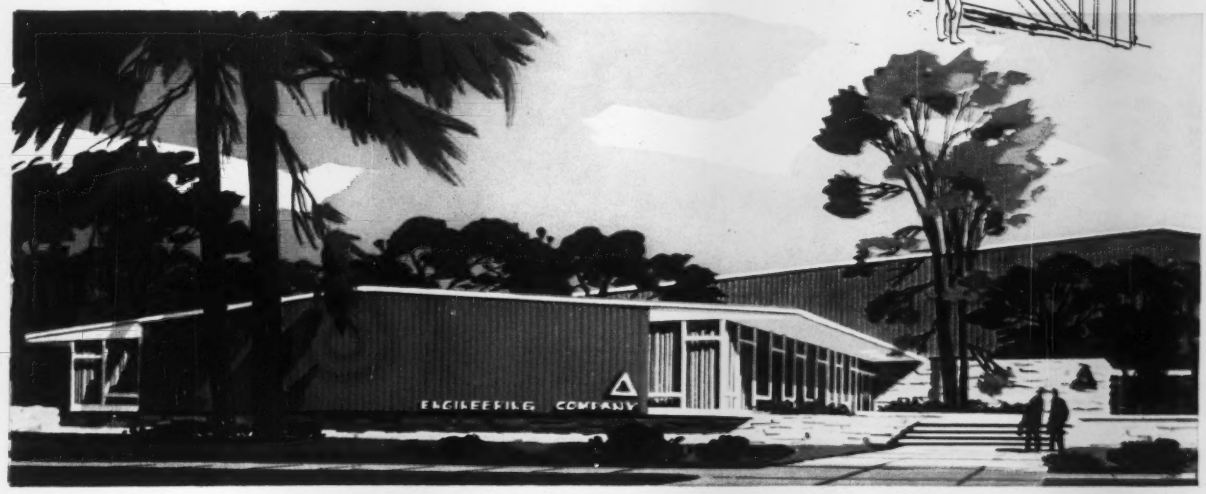

Designed by James John Derks, Architect, Chicago

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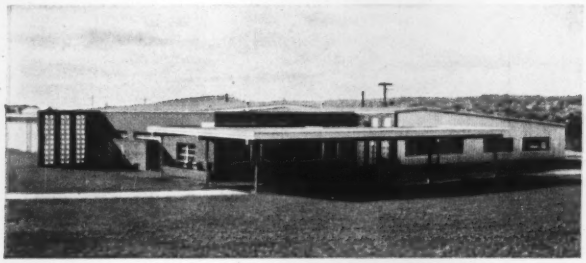
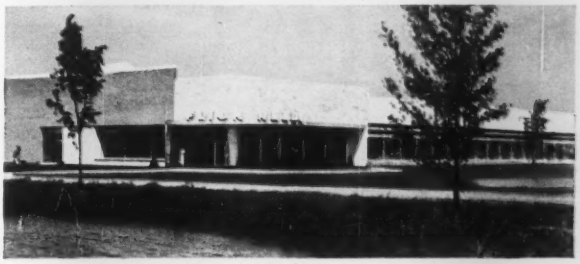
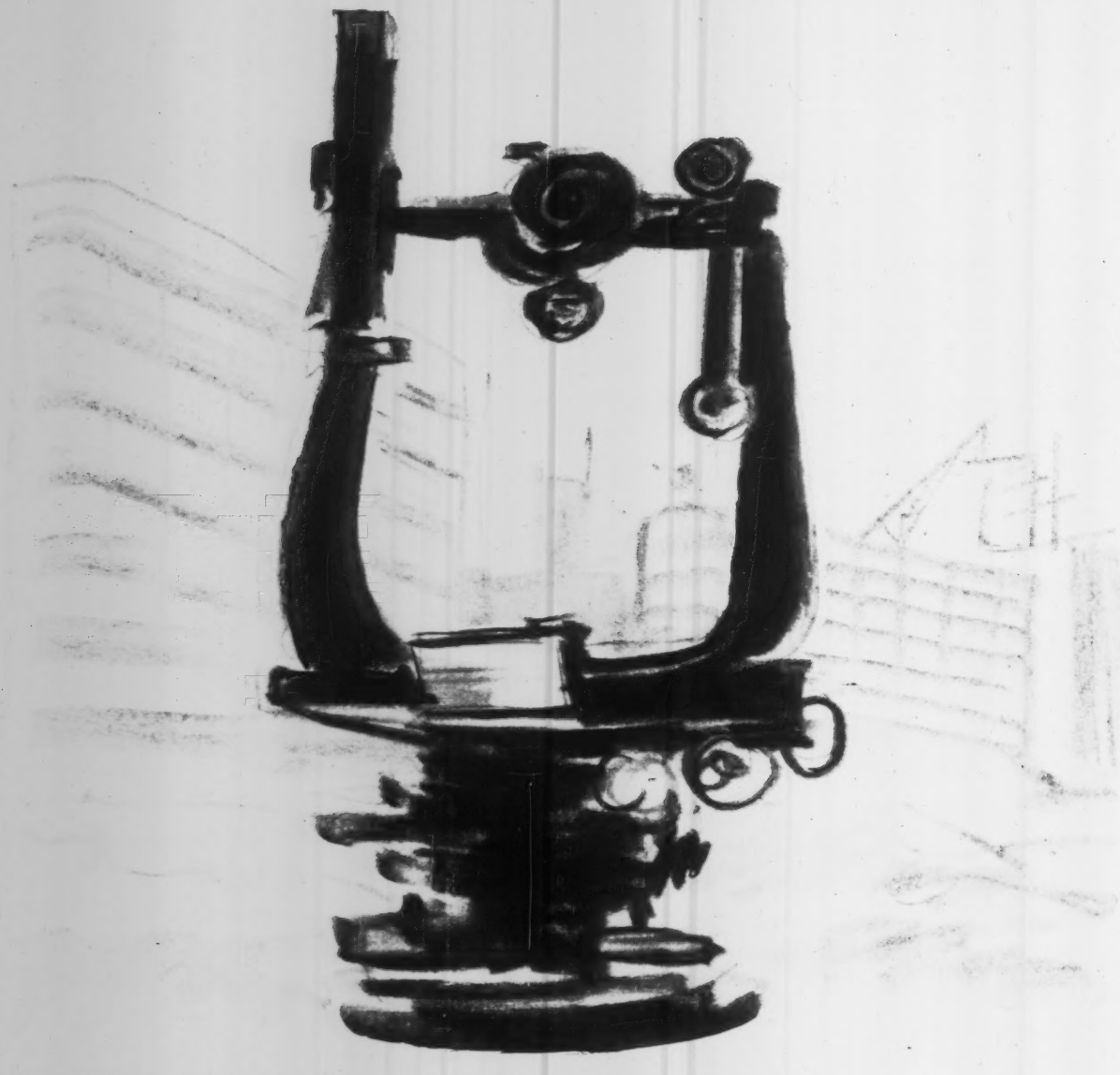


Architect / Richard J. Weibel and Associates, Erie, Pennsylvania



Architect / Zay Smith and Associates, La Grange, Illinois



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Reaching Out for Floor Space

How do you get 12,600-sq ft floors in a high-rise building on a lot measuring only 10,000 sq ft?

Designers of San Francisco's new 22-story International Building answered that question by cantilevering the floors 16 ft out from the tower columns. The building owners bought air rights on the two sides away from the street to make the cantilever design possible.

• **Air rights over garage**—The International Building is on the corner of Kearny and California, right between San Francisco's financial district and Chinatown. It is flanked on the two sides away from the street corner by the St. Mary's Square Garage (ENR April 29, 1954, p. 44).

The garage is classed as an underground structure, but actually it is a five-story building dug into the side of a hill. Most of its roof is covered by St. Mary's Square, a landscaped park, at the level of California St., so there is no possibility of adding future floors to the garage. The park must stay where it is for public use. This made it possible to purchase air space over the garage for the centilevers from the City of San Francisco and the garage operators.

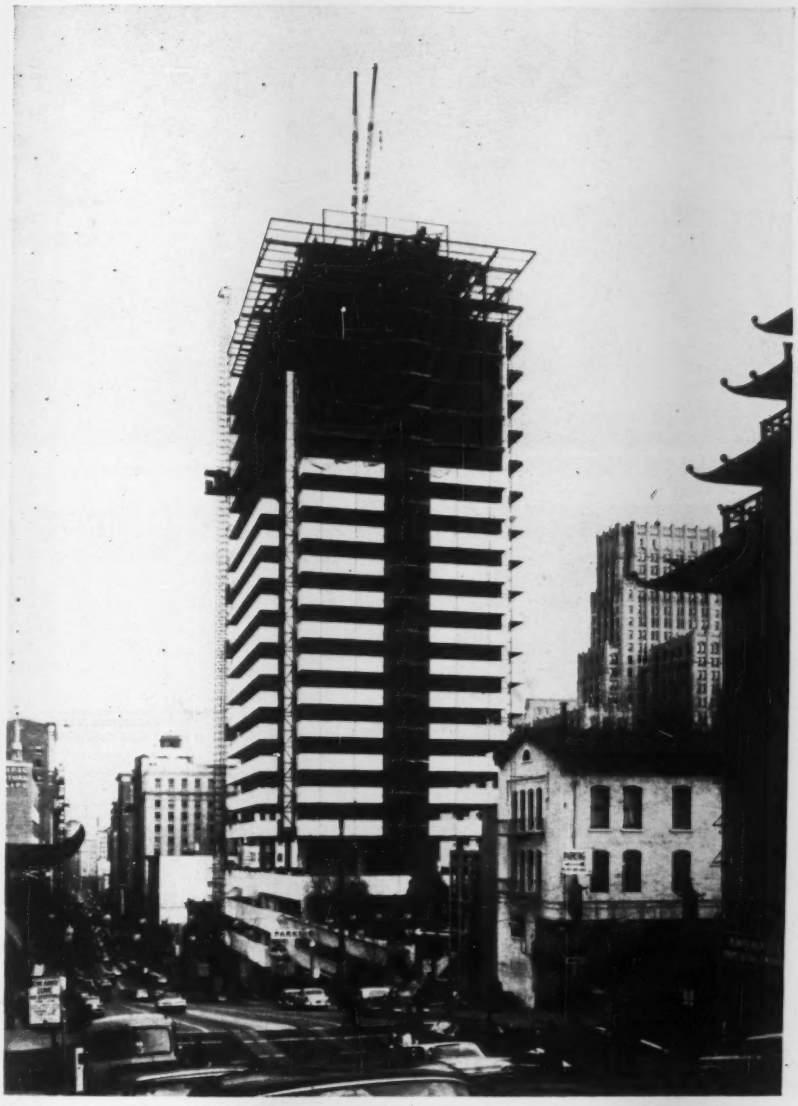
The owners also purchased the right to construct a terrace adjacent to the building over the 75-ft width of the garage roof parking area. The terrace, an extension of the fourth floor of the building, is, in effect, a high-level park that is part of the building. It enhances value of the upper level space on the western side of the building by substituting a park view for a view of a garage rooftop.

Differing floor heights made possible the fourth-floor terrace. Garage floor-to-floor heights are only 9 ft 9 in. Typical story height for the International Building is 13 ft 1 in. However, the first story, is about 30 ft high. And with the fourth story 22 ft high the tower above appears to spring from the fourth-floor platform.

Corner columns in the tower are 90 ft c-c in one direction and 75 ft 2 in. in the other. But with floors cantilevering from the columns, a typical floor is 122 ft 10 in. by 109 ft 4 in.

The cantilever does not extend to the corners of the building but leaves an indentation at each corner. Omitting the double cantilever at the corners reduced structural costs substantially.

The re-entrant corners have architectural advantage. In effect, there are eight corner offices on each floor instead of four.



Skyscraper floors cantilever as do Chinatown's pagoda roofs.

The indentation is partly filled by 6-ft-square air-conditioning ducts, encased with a dark gray, fused enamel facing. These gray vertical lines provide dramatic contrast with horizontal lines of white quartz-faced precast-concrete spandrel panels.

• **Cantilever connections tested**—One big question faced the designers of the cantilever floors—big partly because of earthquake design factors required in San Francisco.

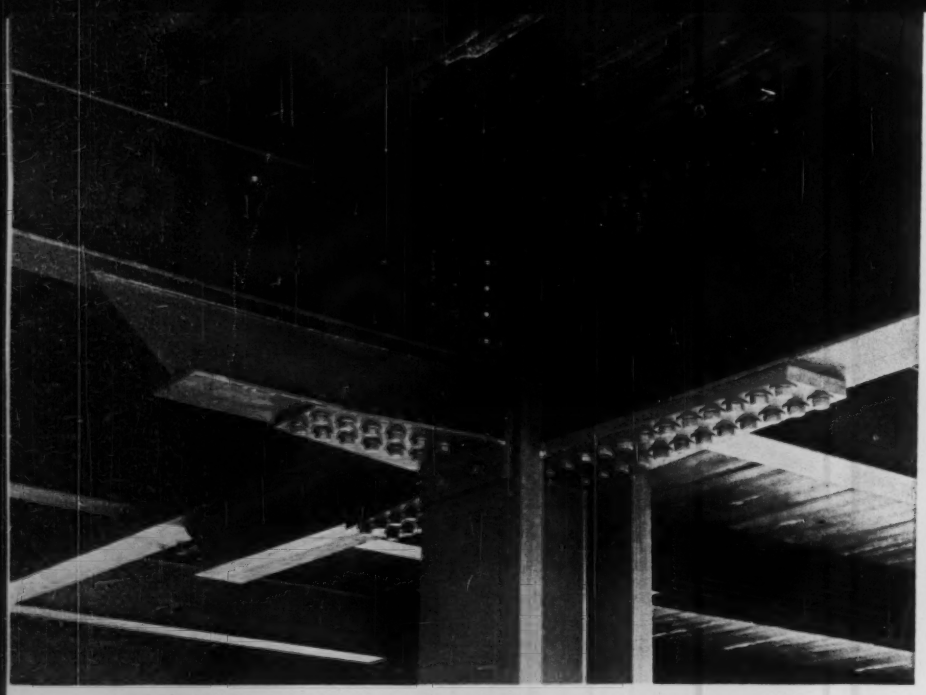
The question: Just how strong are welded tees used to connect columns with girders or beams?

Their answer: Include a test program in the structural steel contract.

Girders supporting the cantilever floors are 27-in. WF sections. Four girders extend out from the tower columns on each side of each floor.

Connections of girders to column web are made with strap plates shop welded to the columns and top and bottom girder flanges. A web plate takes vertical shear.

Where girders connect to the column flange, welded tees form both top and bottom connections. Earthquake



COLUMN CONNECTION includes welded tees such as used on beam at left.

LAB TESTS proved strength of tees.

design, plus the cantilever overhang, precluded use of split I-beams for these tee connections. I-beams are not rolled big enough. (Similar welded tees form the girder-column flange connection for interior girders.)

The designers were concerned about brittle failure of the welds, as well as similar failure of the extra-high-strength bolts used to connect the tees to the columns. And camber of the cantilevers was important.

So they called for a test program. An allowance of $8,000 was made in the structural steel contract for this purpose.

The structural steel contractor, Bethlehem Steel Co., assigned the test program to the Fritz Engineering Laboratory, Lehigh University. Six different-size structural tees were selected. Two of each design were made up and mounted back to back on each side of a thick steel filler for testing in direct tension.

A373 steel was used for all welded tees. Bolts were extra-high-strength chrome molybdenum steel (grade B7A in ASTM Spec A193) with a minimum ultimate strength of 140,000 psi.

The test specimens ranged from tees with 1¼-in.-thick flanges and ¾-in.-thick stems to tees with 2¼-in.-thick flanges and 1¾-in.-thick stems. Number of bolts ranged from 4 to 8.

In addition to testing for brittle failure, the test program was aimed at checking the bolt elongation, the tee stem elongation and the shape of the tee flanges under load.

In five out of the six tests failure occurred through the net section of the stem plate after a large amount of necking down. In the sixth case, the specimen broke through bolt failure, although plate failure was imminent.

In no case was there any sign of distress in the welds, which were stress-relieved, full-butt welds. And in the one case of bolt failure, the specimen had passed the specified ultimate strength for A373 steel.

In all of the tests, the yield point was reached at values slightly below ASTM specifications for the grade of steel used. This was attributed to softening of the steel during the stress-relieving process.

Subsequent coupon tests of the steel before and after stress relieving confirmed the reduction in yield point—but there was no significant drop in ultimate strength. These coupon tests further showed that there was a 50% increase in ductility as measured by percentage of elongation. Since earthquake resistance was a main concern of the designers, they considered the increase in ductility to be helpful, for it would help the building absorb earthquake shock loadings.

The stress-relieving procedure was carefully spelled out in the plans. After being preheated and welded with low-hydrogen rods, the tees were stress relieved at a temperature of 1,200 F. For this purpose, furnace temperatures were increased at the rate of 200 F per hour to 1,200 F, which was held for one hour, then decreased at the same rate. Removal of the members from the furnace was permitted when the temperature was reduced to less than 500 F.

Fabrication of the tees included 100% visual inspection of welds. And 10% of the members were radiographed.

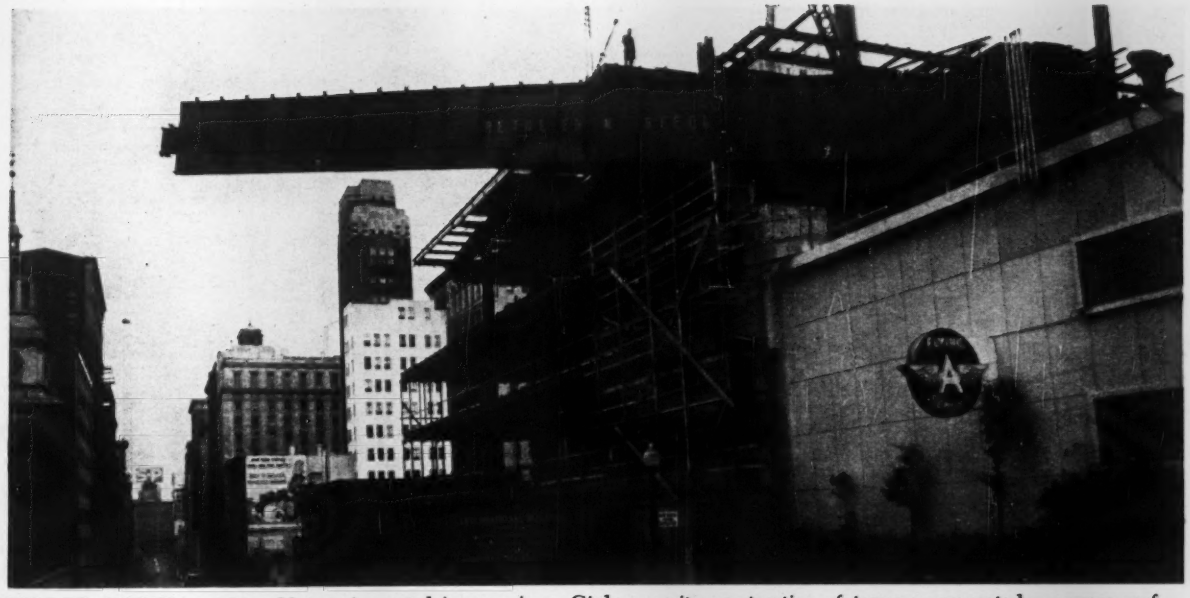
The tests also showed that deflection of the welded tees was negligible compared with that of the whole cantilever system. And deflection of the cantilever floor system was important in accurate alignment of the precast-concrete spandrel panels.

Architectural considerations limited alignment tolerance of these panels to plus or minus 0.25 in. Calculated deflection of the cantilevers was as much as 0.70 in. and averaged 0.40 in. In view of these expected deflections, the spandrel panels were mounted on the bare steel, after which the floor slab was concreted to within 8 in. of the panels, to develop almost full dead load. Then, final adjustment of the panels was made and followed by filling in the floor slab gap. This procedure kept tolerance of the spandrel panels within the required limitation.

• **Lateral-force design**—The structure was designed by the modified cantilever method in accordance with lateral-force provisions of the San Francisco Building Code. This method requires lateral loads to be 3½% of the weight of the building distributed in a triangular load pattern, with a maximum at the top, zero at the bottom. The weight of the building is taken as total dead load plus 25% design live load. Base shear on the building as thus computed was 1,573,000 lb.

The concrete core surrounding the elevator shaft was designed for the 3½% lateral shear for the full height of the building. The core measures 38x45 ft below the 12th floor and 38x37 ft above that.

The steel frame was also designed to take the full 3½% lateral shear from the fifth floor down and lateral based



TERRACE GIRDER weighing 38 tons is erected in one piece. Girder permits construction of terrace over next door garage roof.

on a 1% coefficient above the 7th floor.

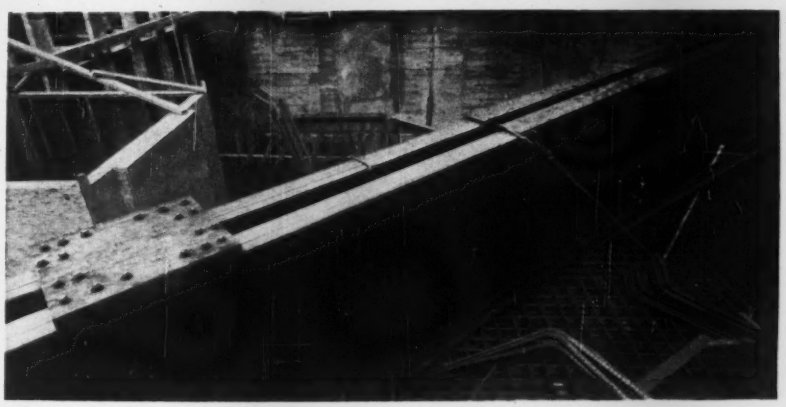
In the design of the shear walls in the lower stories, consideration was given to relative rigidities of the walls and rotation due to unsymmetrical arrangement of the walls. For example, heavy walls buttressing the hillside excavation tended to throw the center of rigidity near a corner. To compensate for this and reduce rotation that might be induced by earthquake forces, the designers beefed up a first-story bent on the line of the tower columns to take one-half of the total seismic force.

Floors of the building are concrete on steel cellular deck. The decking acts as horizontal diaphragms for earthquake-resistance purposes, distributing the loads to the columns and the core walls. Particular emphasis was given to the diaphragm design at the first, second and fourth floors, to redistribute loads where major shear walls change.

• **Caisson foundations**—The building is supported on belled, cast-in-place caissons. Caisson shafts are 4½ ft in diameter. They are drilled through shale to bear on hard sandstone with a design bearing pressure of 25,000 psf. Bells were hand excavated, most being 9 ft in diameter. Average caisson extends 45 ft below the basement floor; deepest, 95 ft below.

In general, each main column is supported on two or three caissons. Caisson caps are designed to transfer the column load to the caissons. A typical cap for two columns is 6½ ft deep and about 16x30 ft in plan.

Main building columns were located next to the property line on the two sides away from the street. This resulted in some difficult problems in transferring column loads to the caissons because of the offset. In some cases, a long, relatively thick (ranging up to 17-in.) base plate was needed to distribute the load.



HEAVY GRILLAGE BEAM supports two columns. Building foundations are caissons.

The most difficult problem occurred at the corner column. It was solved by carrying the column on a heavy grillage beam that extends diagonally from the corner and also supports an interior column. This 45-ft-long beam is 8 ft 8 in. deep and weighs about 60 tons. It has two webs, each 1½ in. thick. Flanges are four 8x4x1-in. angles. The beam distributes load from the two columns (totalling nearly 3,000 tons) to five caissons.

Biggest steel member in the building is a 109-ft girder that supports the fourth-floor terrace. Along with the right to build the terrace over the garage roof, the International Building owners acquired the right to support the terrace in two places. The girder is supported at one end on the garage parapet wall; at the other end, it is supported on a column inserted into the garage and going down three floors to a major ramp wall. Both the parapet wall and the ramp wall were strengthened. (The building's designers had also designed the garage, so this tying together of the two structures wasn't difficult.)

The 38-ton girder was erected in one piece by Bethlehem crews. It was trucked to San Francisco at night, and erection took place shortly after dawn to minimize interference with traffic.

Natomas Corp. is building the International Building. Its major tenant will be a steamship company—American President Lines.

Architects for the $10 million project are Anshen & Allen. Structural engineers are a combination of Gould & Degenkolb and Robert D. Dewell. Foundation engineers are Wm. Brewer and Associates. Dinwiddie Construction Co. is the general contractor. All are San Francisco firms.

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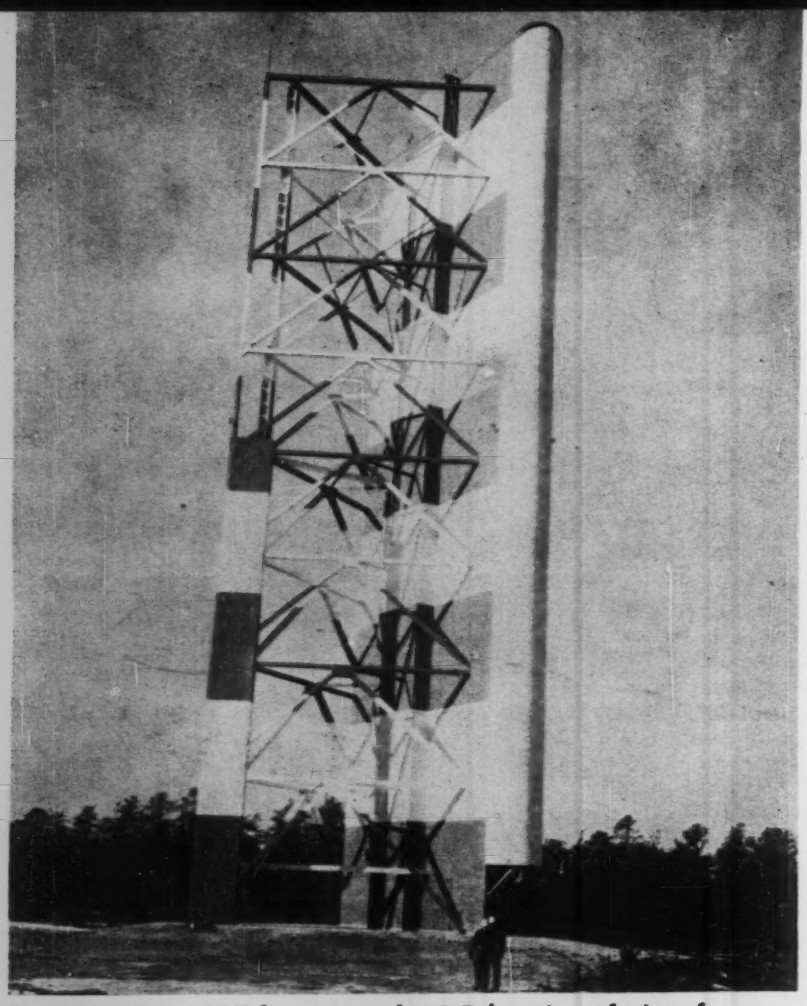
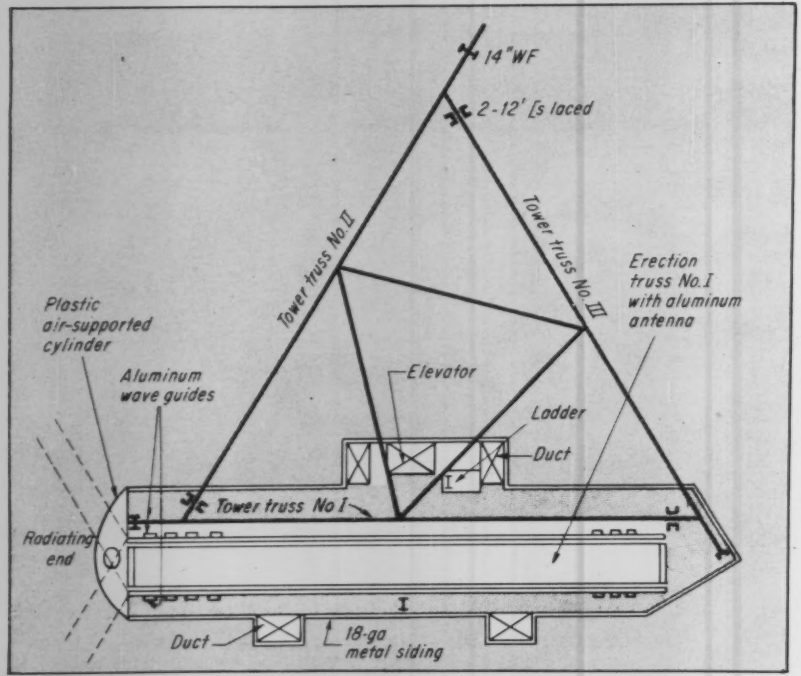


Tower carries a 137-ft antenna for 3-D location of aircraft.



ENCLOSURE retains heated air circulated around the antenna and tower legs to maintain uniform temperatures and prevent condensation.

3-D Radar

Radar that gives altitude as well as distance and direction now stands at Atlantic City, N. J. In that sandy New Jersey soil, it is mounted on a 162-ft structural steel tower that keeps the radiating ends of the antenna straight within $\frac{3}{4}$ in. and allows no more than $\frac{1}{2}$-in. horizontal deflection in a 40-knot wind.

The Federal Aviation Agency hopes that the new device will prove effective in preventing airplane collisions, such as that of the two airliners over New York City last December.

The experimental tower—it's at the National Aviation Facilities Experimental Center—is triangular in plan and supports the antenna on one face. (Other antennas may be added on the other faces later to give full 360-deg coverage.) The antenna is 43 ft wide, 137 ft high and 5 ft thick.

To keep the antenna and all structural components free of condensation and at a uniform temperature, the designers provided a heating and ventilating system and enclosures.

• **Rigid foundation**—To meet the close dimensional tolerances, the designers needed an unusually rigid superstructure carried on a nearly immovable foundation. Yet, the tower is subjected to high lateral loads and is founded on sand with a low compression factor (k).

Because of the large wind area, great height and low weight of the structure, column loads vary from 650 kips compression to 500 kips tension.

To meet these conditions, the designers called for a foundation with pressure-injected reinforced concrete piles, capable of resisting uplift as well as carrying downward loads without significant settlement.

They required some piles to be subjected to extensive and severe tests before superstructure erection. The foundation contractor, R. A. Prendergast & Son, Inc., of Atlantic City, selected Franki Foundation Co. as subcontractor to drive bulb-bottom piles.

One pile was tested with 180 tons in compression and another with 160 tons in tension. Under the 180-ton load, the top of the test pile moved down only 0.13 in., and after removal of the load it showed a mere 0.04-in. residual settlement. Under the 160-ton pull, the pile moved 2.36 in., and after removal of the load, showed a net movement of 1.92 in. The designers considered this performance satisfactory and called for six Franki piles under each apex of a triangular concrete foundation. The tests and analysis also led to these significant

Tower Built to Close Tolerances

conclusions on behavior of such piles:

• Whether in tension or compression, the Franki-type pile in cohesionless soils acts as a friction pile. The size and shape of the bulb base has no appreciable effect on the bearing capacity of the pile for loads of 180 tons or less in compression or 57 tons in tension.

• A 22-ft-long Franki-type pile in loose sand has less downward movement than a corresponding long concrete column bearing on rock. In tension, the upward movement also is less for loads up to 57 tons.

• The settlement of Franki-type piles will not be noticeably different if the piles are founded in sand or on rock.

• **Rigid superstructure**—The triangular tower, equivalent in height to a 16-story building, consists, in essence, of three vertical K-trusses made of 14-in. wide-flange steel sections. The three 14 WF column-chords of the trusses, 48 ft apart, are each supplemented by two 12-in. channels, set about 5 ft away. Provision of two sets of columns facilitates attachment of antennas.

The antenna attaches to the tower with slotted-hole connections. These make possible adjustments to meet the strict dimensional tolerances.

The antenna consists of horizontal and vertical aluminum wave guides (closely spaced, 1½ x 3-in. rectangular tubes), which are supported by aluminum frames about 9 ft high.

• **Erecting the antenna**—To assure accuracy of assembly and speedy erection, the erectors prefabricated the 137-ft-high antenna in a temporary building about 200 ft from the tower. They strengthened the aluminum frames with a 160-ft-high steel truss of about the same width, to facilitate erection. The erection plan called for placing this assembly by tilting it about two hinges atop the concrete foundation.

The erector skidded the 78-ton assembly to the pivots in a horizontal position. There, four sets of seven-part, steel cables for raising the antenna were attached to the truss. Two sets of ⅝-in. dia cables ran over pulleys fastened about 50 ft from the base and two sets of ¾-in. dia cable over pulleys about 75 ft farther up. The cables extended to pulleys on the tower at corresponding heights, down to pulleys at the base of the tower, horizontally to two friction hoists and finally to two cranes, which supplied the lifting power. The upper load points on the tower were braced by two ⅝-in. dia cables extending to deadmen in the ground.

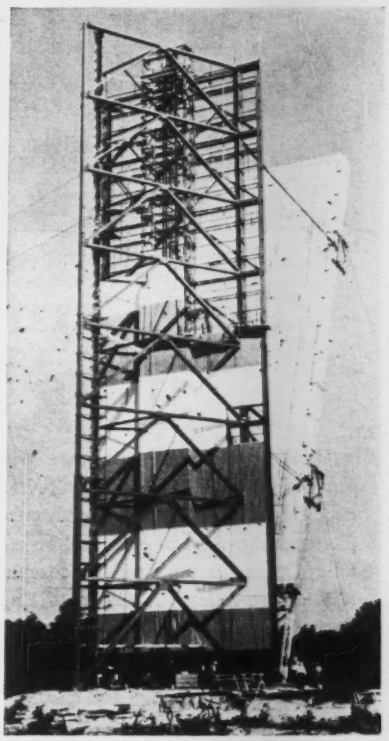
Prefabricated antenna was skidded 200 ft to the tower.

Instrumentmen with theodolites at ground level checked the connections of the antenna to the tower, to see that the ¼-in. tolerance requirement was met. They sighted on cross hairs on a glass plate set on the top of the antenna and at about 9-ft intervals below. The targets were plugged into the ends of the wave guides.

After the antenna was bolted in place, ducts were installed to circulate heated air and the tower enclosure was erected. An air-inflated plastic cloth surrounds the radiating edge of the antenna; corrugated metal siding protects the rest of the enclosure.

The heating system maintains the circulated air at 20 F above outside ambient temperatures, but at a minimum of 40 F. An anemometer controls the air pressure inside the plastic cylinder; pressure varies from about 2 in. of water for normal weather to 8 in. (about 40 psf outside) under hurricane conditions.

Maxson Electronics Corp. of New York City developed the electronic 3-D surveillance radar system. Strobel and Rongved, New York City engineers, developed and designed the structure and all structural components for the system. Taylor & Gaskin, Inc., of Detroit fabricated and erected the tower and antenna.



PULLED BY CABLES, the antenna was tilted into place.

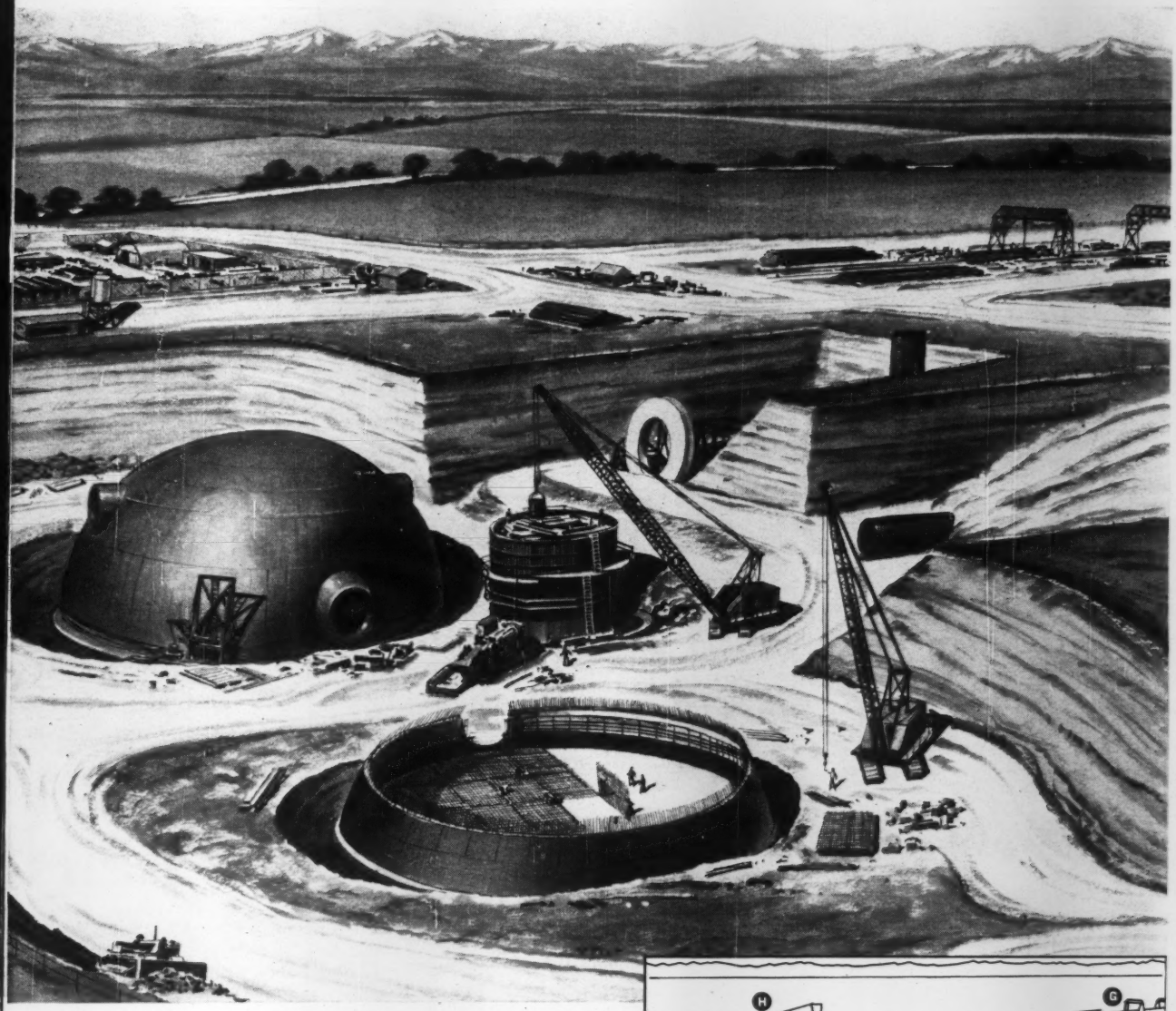
Titan underground missile base uses CF&I Steel Products

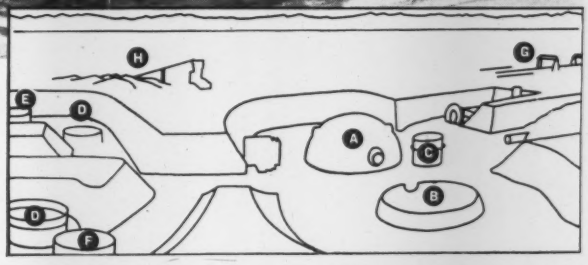
Vital to America's defense will be this completely-underground ICBM installation on the Lowry Bombing Range near Denver. It will comprise six complexes—one of which is pictured above—and each will be ready to fire three 98-foot long Titans. In building the complexes, which will occupy 875 square miles, the Corps of Engineers has used a variety of CF&I Steel Products — products known for their dependability.

CF&I Grader Blades and Cutting Edges gouged out huge excavations in which the installation will be buried. Thousands of tons of *CF&I Reinforcing Bars* fortify most of the concrete structures, including the launching silos and support installations. *Cal-Tie Wire,* in handy dispensers, was used to tie the rebars together.

Throughout the project, *CF&I-Wickwire Wire Ropes* were chosen for cranes, steam shovels and hoists, because these ropes have extra-high breaking strength and provide longer service life. *Realock Fence* and *CF&I Field Fence* guard the excavations and police "off limits" areas.

CF&I-Clinton Welded Wire Fabric was specified to give an additional steel backbone to many concrete structures, making them as "shock proof" as possible. The bases of the powerhouse and control center are further reinforced with *CF&I Hard Drawn Prestressed Concrete Wire for Redrawing. CF&I*





- A Power House
- B Control Center
- C Portal Silo
- D Launching Silos
- E Equipment Terminal
- F Propellant Terminal
- G Rebar Forming Yard
- H Sand and Gravel Quarry, Concrete Batching Plant

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CF&I Industrial Screens were selected for many sand and gravel separators. And *CF&I Galvanized Steel Strand* is prominent as guy wire on utility poles.

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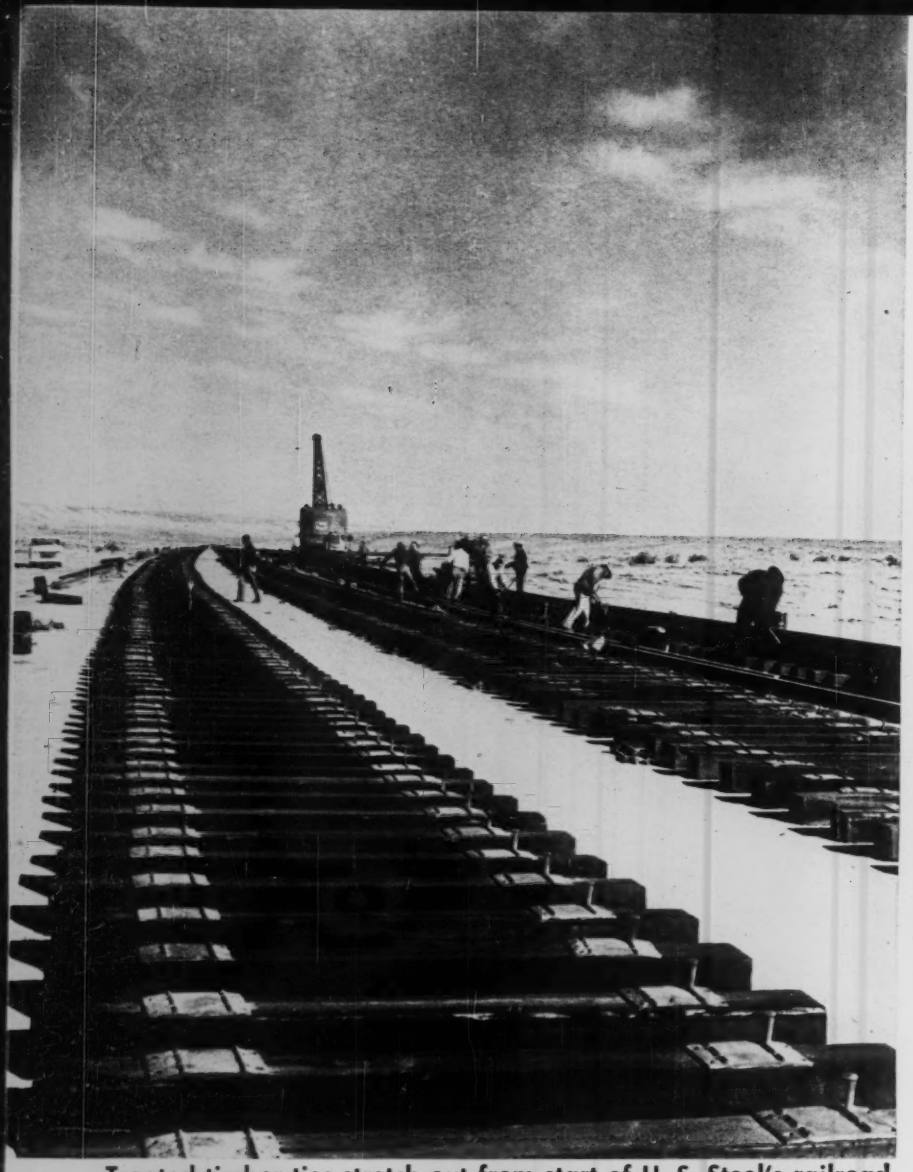


Treated timber ties stretch out from start of U. S. Steel's railroad.

Dune sand hampered construction

New Rails

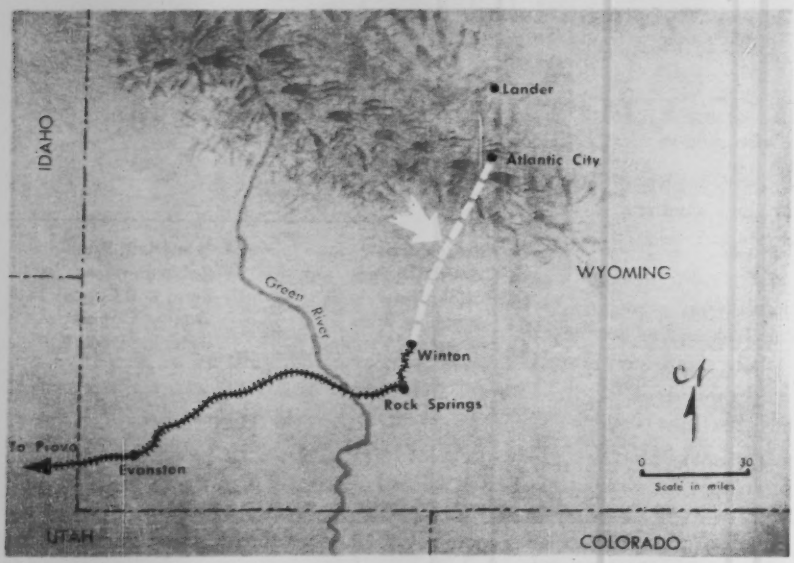
Construction crews are rushing to complete a 76-mile railroad spur to U.S. Steel's new iron ore mine and beneficiation center in the rugged Wind River Mountains of west central Wyoming.

The rail line will rank among the longest private railroads in the U.S.

In addition to the usual problems of operating construction equipment at high altitudes, builders had to fight a five-mile section of loose, abrasive blow sand that bogged down excavators and hauling units.

In an area of almost perpetual wind, engineers designed the rail line to prevent blowing sand and snow from accumulating. Crews are oiling cut and embankment slopes and planting protective vegetation to reduce wind erosion.

• **The railroad's design**—Union Pacific engineers designed the road. Design was to main line criteria, as modified by the spur's special function in handling ore in 140,000-lb gross weight cars.



RAIL LINE will take concentrate 76 miles to steel works at Provo, Utah.

along portion of new route.

Rugged excavation marks north end of line near historic South Pass.

Cross Oregon Trail to Reach Mine

Beginning at Winton (elevation, 6,400 ft) the first 60 miles of the line traverses a high plateau. It crosses the Continental Divide at South Pass, a key point on the old Oregon Trail. At about mile post 60, the road enters the foothills of the Wind River Mountains and climbs 1,000 ft in about 15 miles.

Maximum grade was established not by the ability of a locomotive to haul cars uphill, but by the equipment's ability to brake the loaded cars on the southbound trip. Maximum grades are 2% ascending and 1% descending. Maximum curvature is 10 degrees.

Soil conditions vary from dune sand near the Sweetwater River to sandy clay to rock at the mountain terminus. Maximum cut is about 40 ft deep; maximum fill, about 90 ft high. About 2 million cu yd of earthwork is involved. U. S. Steel's American Bridge Division built four short-span steel girder bridges.

Designers had originally planned to design the rail line electronically in Union Pacific's new data processing center. But they turned to conventional methods when they discovered that programming costs would offset the advantages of electronic design.

Engineers laid the preliminary line on aerial photographs and topographic maps. Surveyors then ran the preliminary line in the field. Standard cross sections were run through an electronic computer to obtain earthwork quantities. Engineers then used conventional methods to balance quantities and establish the final location.

Final design counts on the wind to blow snow and sand off the tracks. On level terrain the track is elevated. When cuts were widened to obtain needed fill, they were designed to provide snow storage away from the tracks. Where possible, designers daylighted cuts to get an uninterrupted sweep of wind. Even in cuts, the roadbed was elevated.

Joint venture contractors J. H. Pomeroy & Co., Inc. and Bechtel Corp., both of San Francisco, had trouble getting enough water for construction operations. Even by Wyoming standards, weather in the area has been dry for a long spell. Moisture content of the soil typically ranges from 2 to 4%, far below optimum content for compaction. The contractor had to drill wells and haul water by tank truck.

• **At the mine**—Located at an elevation of 8,300 ft, the Atlantic City project, as the mine and beneficiation center are called, will be the highest large-scale, open-pit mining operation in the country. Columbia-Geneva Steel Division of United States Steel Corp. will sink an estimated $60 million in the over-all project. Ore processing is scheduled to begin next year.

The plant will be the first integrated iron ore beneficiation plant west of the Mississippi to produce an agglomerated product.

The Atlantic City formation is very similar to the magnetic taconites of Minnesota as regards type and character of mineralization. It will be strip mined by conventional methods.

In a region of short water supply, it will have a recovery system for re-use of water that is unique in such operations.

The project, which will be Wyo-

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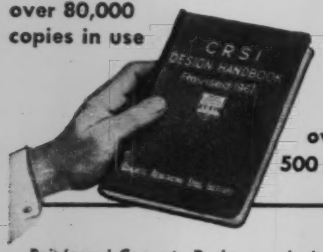

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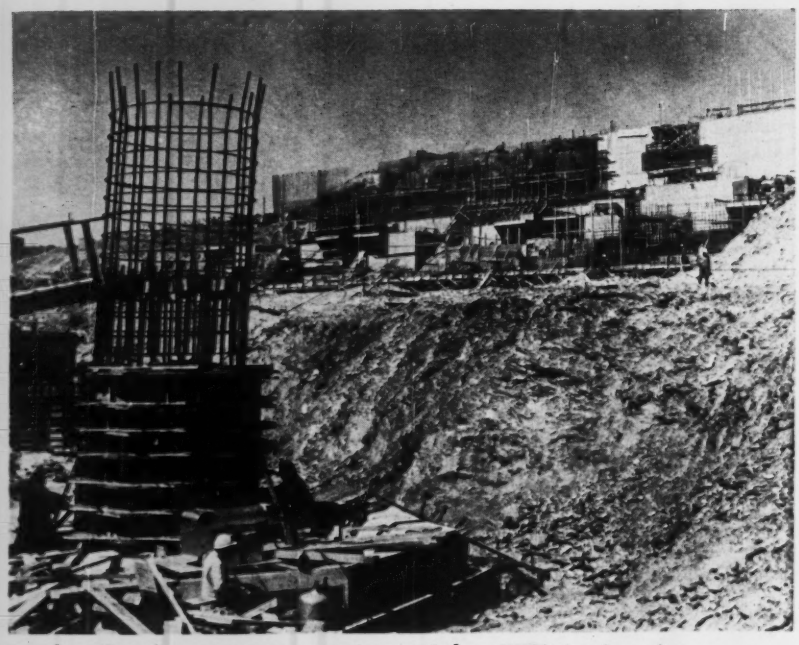


Steel and concrete structures rise at Atlantic City mine site.

ming's largest industrial operation, will have a capacity of about 4,000 tons of beneficiated ore per day. The ore contains about 30% iron. It will be treated and concentrated to raise the iron content to 60% and formed into marble-sized agglomerates for shipment.

The concentrate will move over the new line to a junction with the main line of the Union Pacific at Winton. It then will travel 279 miles over UP tracks to the Columbia-Geneva Works at Provo, Utah.

Major units at the mine include crushing and screening plants, an ore concentrator, an agglomerating plant, loading and shipping facilities, an extensive water storage and handling system and an integrated sewage disposal system. General and mine office buildings, maintenance shops, warehouse, garage, testing laboratory, dispensary and fire station will complete the industrial complex.

Final product of the mill is concentrate (about 60% iron) in the form of agglomerated, rock-hard balls about ½ in. in dia.

Processing the ore requires large quantities of water, always a problem in this arid section. As a result, use of fresh water is kept at a minimum and the contractor is installing facilities to recover as much of the water as possible after process use.

The principal source of water is Rock Creek; 50% of the flow in that stream comes from melting snow that runs off in May. Engineers decided to dam Rock Creek to impound about 2,800 acre-ft of water for use during the entire year.

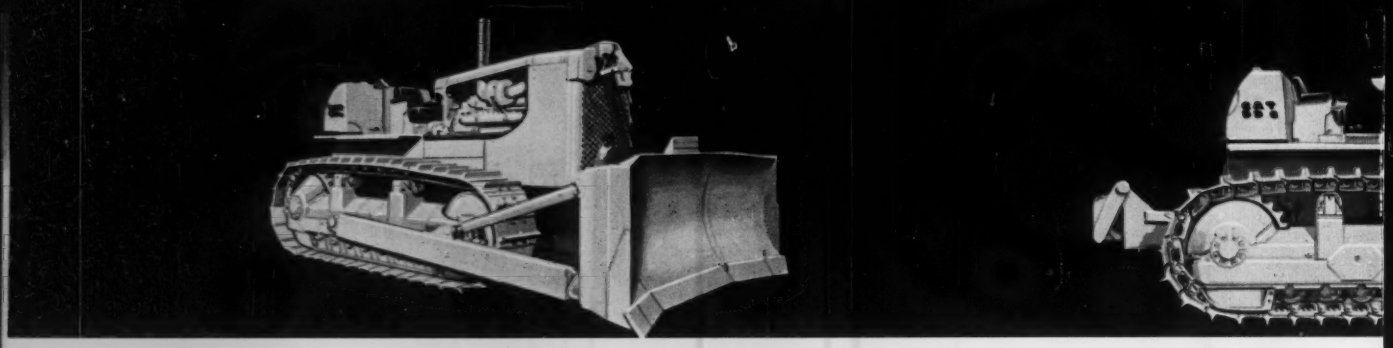
From the reservoir, water moves by gravity through a 20-in. line to the main pump house near the concentrator. Fine tailings, after most of their water content has been removed by thickeners and recirculated, will move by gravity to a large tailings pond, which ultimately may cover some 700 acres to a maximum depth of 170 ft. As solids settle in the basin, clear water will be skimmed from the pond's surface by a decant system and returned to the concentrator.

• **Timetable**—Work on the over-all Atlantic City job is on a 24-month schedule that is not only fast for so big and involved a project, but one that must take into account seasonal factors as well. The schedule requires all structures to be enclosed by November 1, so that processing machinery can be installed during the winter of 1961-62 to permit production during the second half of 1962.

Stanley A. Cohlmeyer is project manager for U. S. Steel. J. A. Bunjer is chief engineer for the Union Pacific Railroad; Harold Durrant supervised design on the Atlantic City line. Project manager for Pomeroy-Bechtel is Earl T. Van Geem.

Two major subcontractors are working on the rail line. Franco Railroad Construction Co. of Spokane, Wash. is laying the track and Arvis Construction Co. of Oklahoma City is excavating for the last 16 miles of line north of Sweetwater. All steelwork is being erected by the American Bridge Division of U. S. Steel under the direction of C. W. Waiteley, project manager.

385 HP! FROM CATERPILLAR...THE NEW D9G



NEW D9G: 385 HP, 64,800 LB., POWER SHIFT,

For high-volume dozing, pushloading or ripping, the new D9G has what it takes . . . at minimum cost per yard!

The engine in the new D9 delivers 385 flywheel horsepower. That's *100 more horsepower* than the first D9 introduced five years ago!

Weight: 64,800 lb.—14% more than the first D9!

Torque divider power shift transmission . . . massive heavy-duty undercarriage . . . and power train with new, built-in ruggedness for long life.

What else is new? Matching the D9G, to make best use of its power, is a full line of attachments. Cable controls, hydraulic controls, pushing equipment, dozers, rippers and others—all designed to help this new tractor really put out on the toughest big jobs.

CAT D353 ENGINE AND MATCHED POWER TRAIN

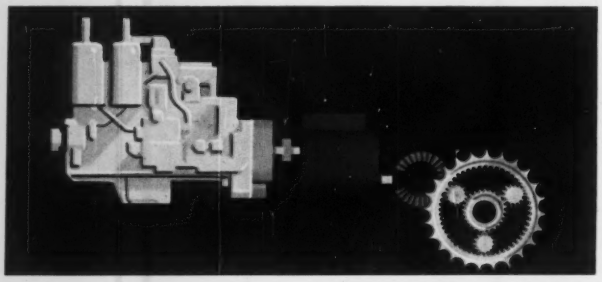
Engine: This engine, rated at 385 HP (flywheel) at 1330 RPM, has been proven over thousands of hours on the roughest jobs. Cat-built, its 6.25" x 8" 6-cylinder design now incorporates these new features:

• **Controlled Turbocharging**—This system, found only in the D9G among crawler tractors, automatically forces more air into the cylinders during lug. Result: increased maximum torque, fast engine response over a wide range of operation.

• **Aftercooler**—Air leaving the turbocharger passes through a water-cooled heat exchanger. Cooled air has greater density. Thus, more air can be packed into the cylinders, giving greater power output and efficiency.

• **PLUS**—Shroud-mounted fan with torque limiting clutch provides maximum cooling during lug and reduces fan-absorbed HP by 30%. Exclusive Caterpillar fuel injection system allows use of low-cost fuel. Also, twin dry-type air cleaners . . . oil-jet-cooled pistons . . . "Hi-Electro" hardened cylinder liners and crankshaft journals.

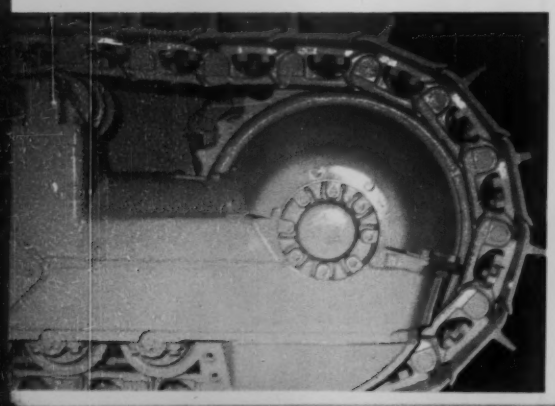
New Power Train: Major advances in the D9G's new power train include *new oil-cooled steering clutches and brakes, new planetary final drives*, and a time and cost saving *common lube system*.

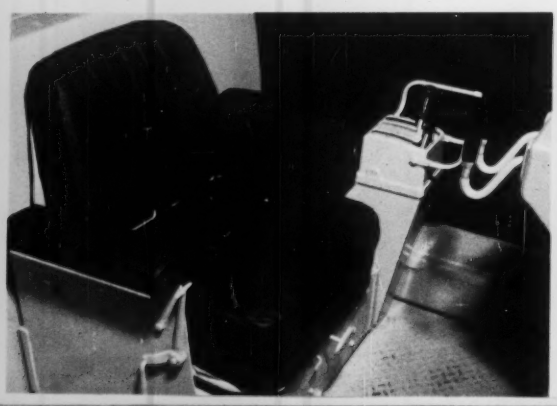


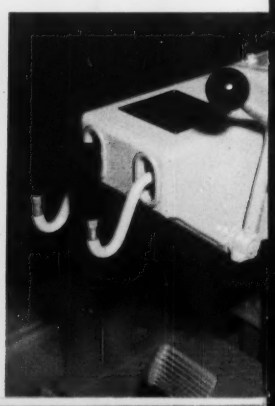
The new steering clutches, spring engaged and hydraulically released, need no adjustments. The longer service life of this type of clutch, as well as that of oil-cooled brakes, has been proven by millions of hours' use on D8H Tractors.

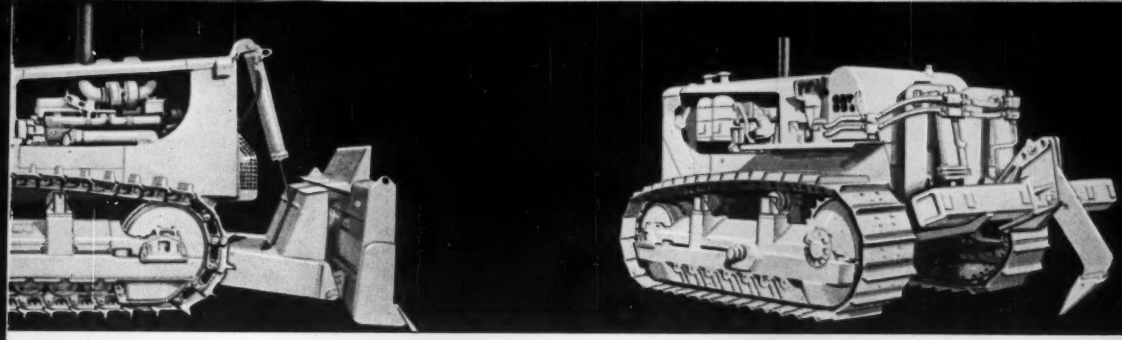
The new planetary final drives increase gear reduction ratios from 8.8:1 to 18:1, materially reducing torque load on all other power train components. A common system cools and lubricates torque divider, transmission, bevel gear, steering clutches and brakes. This means one service point . . . one type of oil. Final drives have their own pressure lube systems complete with pump, filter and disposable element.

Entire power train has unitized construction for fast, individual removal of components.

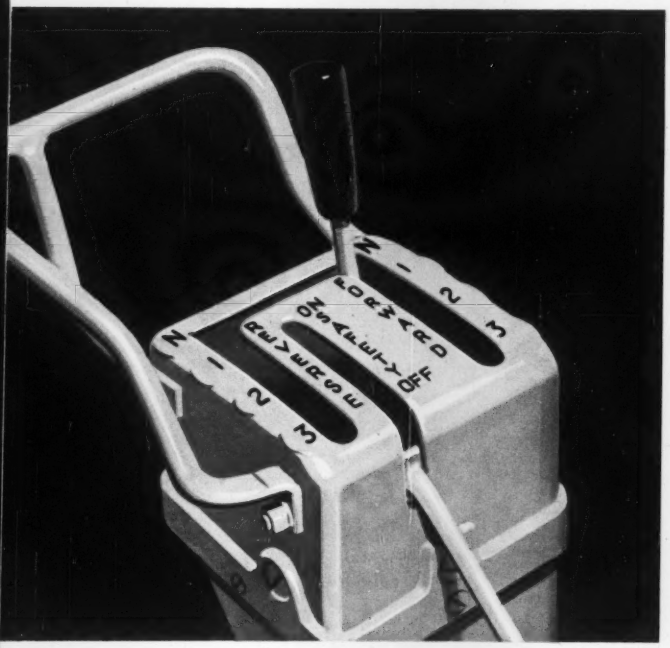


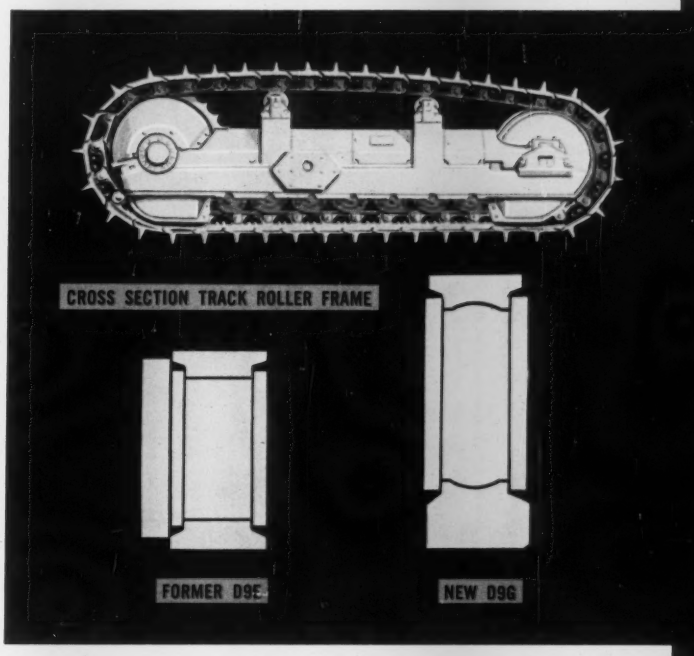






HIGH-PRODUCTION DOZER, PUSHER, RIPPER





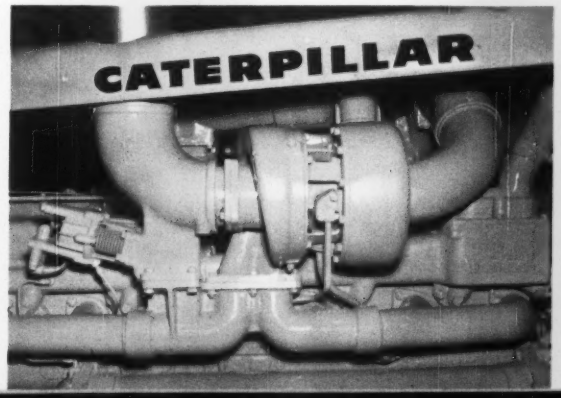
PROVEN TORQUE DIVIDER POWER SHIFT:

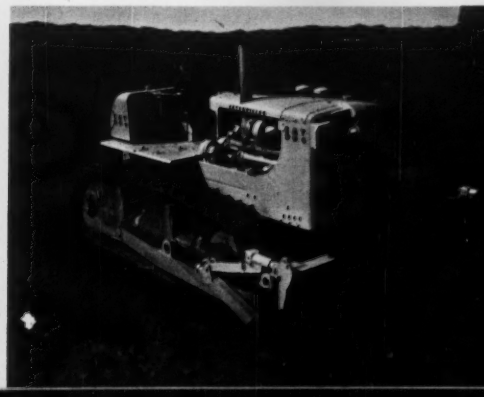
Standard equipment on the D9G, this exclusive Caterpillar design combines the efficiency and "snap" of direct drive with the load-matching and anti-stall characteristics of a torque converter.

A single lever gives the operator finger-tip control of his machine. It adds up to fast cycle times, less operator fatigue with greater efficiency. You get more out of the machine *all day*.

MASSIVE HEAVY-DUTY UNDERCARRIAGE:

Immense strength and rigidity have been built into the D9G undercarriage to make it more than equal to the roughest ripping job. Box section frame is wider and deeper than previous models. Hydraulic track adjusters are standard. Lifetime lubricated rollers with special alloy deep hardened rims assure long life . . . and they require no servicing until rebuilt. These features give the D9G the finest big tractor undercarriage ever built.

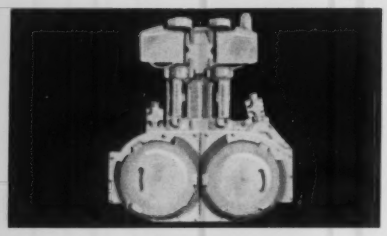




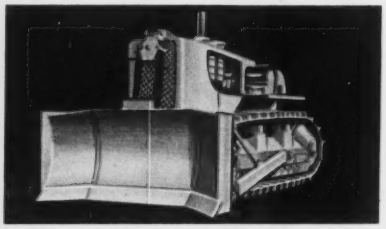
The NEW 385 HP D9G—with high-production attachments

The D9G is big . . . and, it becomes versatile, too, with the many matching attachments your Caterpillar Dealer offers. Cable controls, hydraulic controls, rippers, dozers, pushing equipment, scrapers and others help make the D9G the most productive big tractor available.

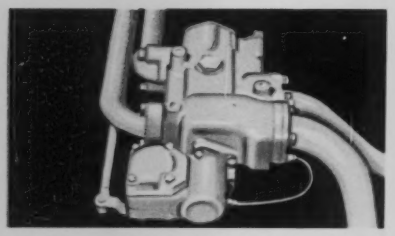
To prove the D9G's productive capabilities on your job, talk to your Caterpillar Dealer.



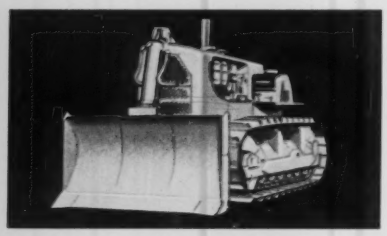
New cable controls have larger clutch, brake and drum capacities and are hydraulically boosted. Available in front or rear single drum for dozer application. Rear single drum may be converted to double drum at any time. You buy what you need.



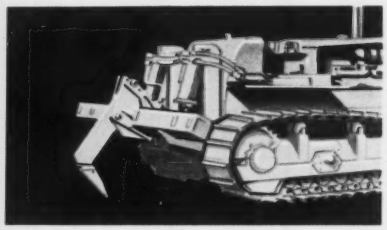
No. 9U can increase dozing production as much as 50%. Also available are No. 9A and No. 9S. Tilt cylinder can be used with U or straight blade. Choice of hydraulic or cable control for all blades. Hydraulic dozers have "quick-drop" valves.



New hydraulic controls available in nine arrangements to meet every application need.



No. 9C dozer combines dozing and cushioned pushing functions into one attachment. As a pusher, it allows 3 MPH cushioned contact. Rear-mounted cushion push block also available for tandem pushing.



No. 9 ripper—5-position clevis, selection of shanks and tips, quick-change features adapt No. 9 to a variety of materials and conditions . . . results in considerable savings over drilling and blasting.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

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New Products

A Man Can Pump 30 gpm With Portable Hand Pump

A hand-operated diaphragm pump is part of a line of non-clogging pumps. The pump is self-priming.

It will carry industrial wastes, sewage, and any material that will not attack the rubber diaphragm or neoprene valves. Any solid that passes through the 2-in. suction and discharge connections can pass through the pump. It has a capacity of 30 gpm and a maximum suction lift of 25 ft.

Pump is 7½ x 10½ x 17 in. It comes in two models—one with the inlet on the side, the other with it in the bottom of the base mounting.

The "Lever Action" pump is manufactured in aluminum, 10½ lb; bronze, 29½ lb (prices range from $79 to $96); and stainless steel. The Edson Corp., 334 So. Water St., New Bedford, Mass.

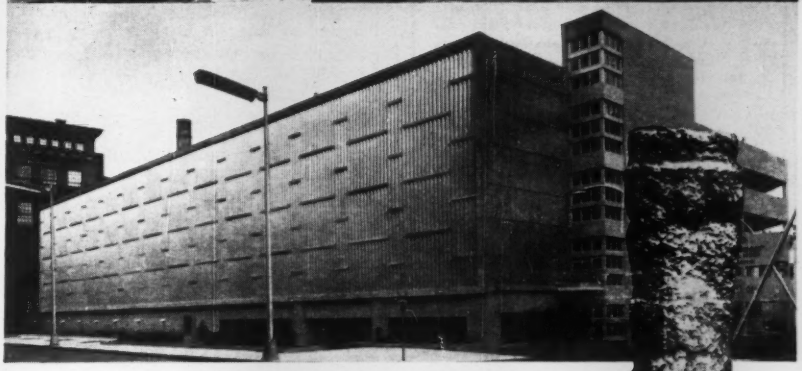
Light Drill Cuts Concrete At 7,200 Blows a Minute

Although it weighs only 30 lb, the Roto-Imp JL-200 is a heavy-duty core drill capable of cutting 1⅛ to 6-in.-dia holes through fully aged concrete and ⅜ to ¾-in.-dia reinforcing bars.

A 1½-hp. motor, running on 115-v ac-dc, actuates the drill bit to rotate at 1,200 rpm, delivering 7,200 impacts per minute.

Damage to surrounding surface is greatly reduced, according to the manufacturer, by two features: the drill operates without water; and shattering action is localized at bit tip.

Drill requires 15 to 20 lb hand pressure for satisfactory operation. Bill Jack Scientific Instrument Co., Solana Beach, Calif.



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New Product Briefs

Aquatic Weed Killer

Chem Pels 2, 4-D controls submerged and floating broadleaf weeds. Developed in pelletized form for slow regulated release of plant-killing ingredients. Non-toxic to humans, animals, fish. Normally, apply at rate of 100 to 150 lb an acre. CHEMICAL INSECTICIDE CORP., 30 WHITMAN AVE., METUCHEN, N. J.

Horizontal Drill

Earth drill gets under streets, lawns, shrubs, etc., without expense of tearing them up, trenching and backfilling. Holes from 2 to 12-in. in dia and up to 200 ft long. Powered by Briggs & Stratton 5½-hp, 4-cycle gasoline engine. CONSTRUCTION MACHINERY CO., WATERLOO, IOWA.

Dewatering Pumps

PosiJector self-priming centrifugal pumps handle water with large diameter solids. Sizes 3 in. and 4 in. with capacities of 330 gpm and 760 gpm at 10 ft suction lift. JAEGER MACHINE CO., COLUMBUS 16, OHIO.

Distance Measure

Model DM-20, transistorized version of Electrotape, instantaneously measures distances from 250 ft to 100 miles. Operates on continuous wave radar principles. Units work in pairs, operate day or night and in any weather. CUBIC CORP., SAN DIEGO 11, CALIF.

Slurry Pump

"JC" pump for abrasive and corrosive substances. Available with medium, hard or extremely hard metal casings, impellers and liners, depending upon the application. Eleven models in six sizes: 1, 1½, 2, 2½, 3 and 4 in. MORRIS MACHINE WORKS, BALDWINSVILLE, N. Y.

Submersible Pumps

Series F submersible 8-in. pumps for use in wells and as horizontal or vertical in-line boosters. Sizes range from 10 hp through 50 hp and capacities range from 150 to 550 gpm. Bowls and impellers are bronze. SUMO PUMPS, INC., 23 BROWN HOUSE ROAD, STAMFORD, CONN.

Asphalt-Plastic Liner

Meadowmat, for lining reservoirs, chemical treatment ponds, sewage lagoons, etc. Liner has seven layers. Polyvinylchloride is sandwiched between layers of asphalt bond, asphalt-saturated felt and a weather coat. Nominal thickness ¼ in., sheet size 4 x 14 ft. Combines quality of asphalt with strength and elasticity of the plastic. W. R. MEADOWS, INC., 26 KIMBALL ST., ELGIN, ILL.

Adhesive-Backed Asbestos Tape

Besto-tak's holding power extends to 500F (commercial grade) and 900F (in other grades). Limited to 275F on unsupported structures. Thickness: 0.022 to ⅛ in.; width: ¾ to 6 in. JOHNS-MANVILLE, 22 E. 40TH ST., NEW YORK 16, N. Y.

Plaster or Mortar Mixer

Trailer type. Self-cleaning rapid-discharge 6-cu ft drum. Adjustable paddle-type blades. Safety grill and bag splitter. GILSON BROTHERS CO., BOX 152, PLYMOUTH, WIS.

Lighting Fixture

Polystyrene refractor sides for glare reduction and low maintenance. Two and four-lamp fluorescent Versateer units, with 25 x 45 or 45 x 45-deg louvers. THOMAS INDUSTRIES INC., 205 E. BROADWAY, LOUISVILLE, KY.

Concrete Sawing Blades

GC 3000 Series. Reinforced for longer life. Cut widths from 3/16 to 7/16 in., CLIPPER MANUFACTURING CO., 2800 WARWICK, KANSAS CITY 8, MO.

Post Cap

For speedy connection of wood beams to 4 x 4 wood columns. Zinc-coated, 16-ga sheet steel, with 9-ga nails. Called TECO post caps. TIMBER ENGINEERING CO., 1319 18TH ST., N.W., WASHINGTON 6, D. C.

Coated Couplings

Stab-Clad Style 123 pipe coupling. Preassembled. Electrical bonded for cathodic protection against corrosion. Has three layer coating: a phenolic resin, a coal-tar epoxy resin, and coal tar enamel. Sizes: 4 to 12-in. ID. DRESSER MANUFACTURING DIV., DRESSER INDUSTRIES, BRADFORD, PA.

Pump Actuator

Vac-Trol (R) attachment on a line of automatic submersible pumps makes it possible to control pump action manually. Enables user to reduce water level below normal automatic turn-off level. KENCO PUMP DIVISION, 1305 OBERLIN AVE., LORAIN, OHIO.

Portable Shelters

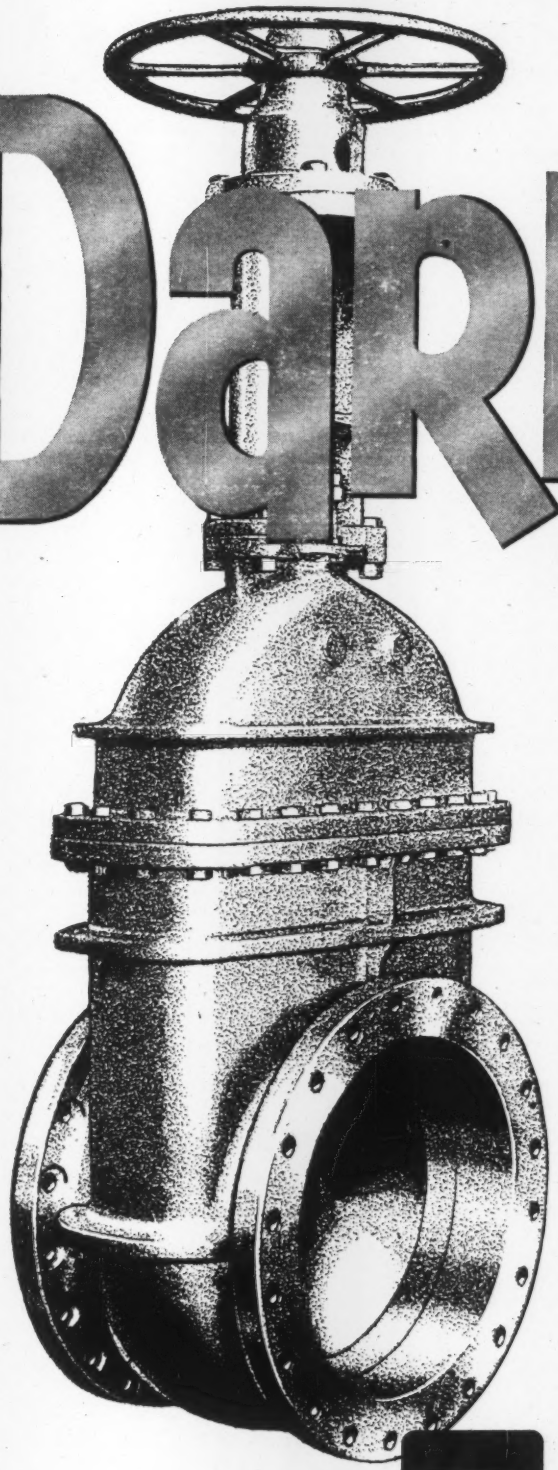
Geospace Dome 22 ft diameter, 12½ ft high, weighs 450 lb. Bolted sandwich panels have foamed-plastic insulation core. GEOSPACE DOME SHELTERS, 800 N. LINDBERGH BLVD., ST. LOUIS 66, MO.

Air Bubble Dome

Transparent 6-mil vinyl, 20 ft in diameter and 13 ft high, weighs 73 lb. Inflated with 5-psi air. CRYSTAL-X-CORP., BOX 323, WAYNE, PA.

YOU CAN DEPEND ON

DaRLIng



Darling aluminum gate valves resist corrosive attack from chemicals such as hydrogen peroxide, ammonium nitrite, acetic acid and concentrated nitric acid. In such services *you can depend on Darling* aluminum gate valves to last longer, cut maintenance costs.

Darling metallurgists tested—then standardized—on aluminum alloys that provide maximum strength and corrosion resistance. Rigid quality control and precision assembly assure continuous ease of operation. The exclusive revolving double disc parallel seat feature means freedom from leakage and assures long service life.

Darling aluminum gate valves are available in sizes from ½" through 24". We will be glad to make recommendations.

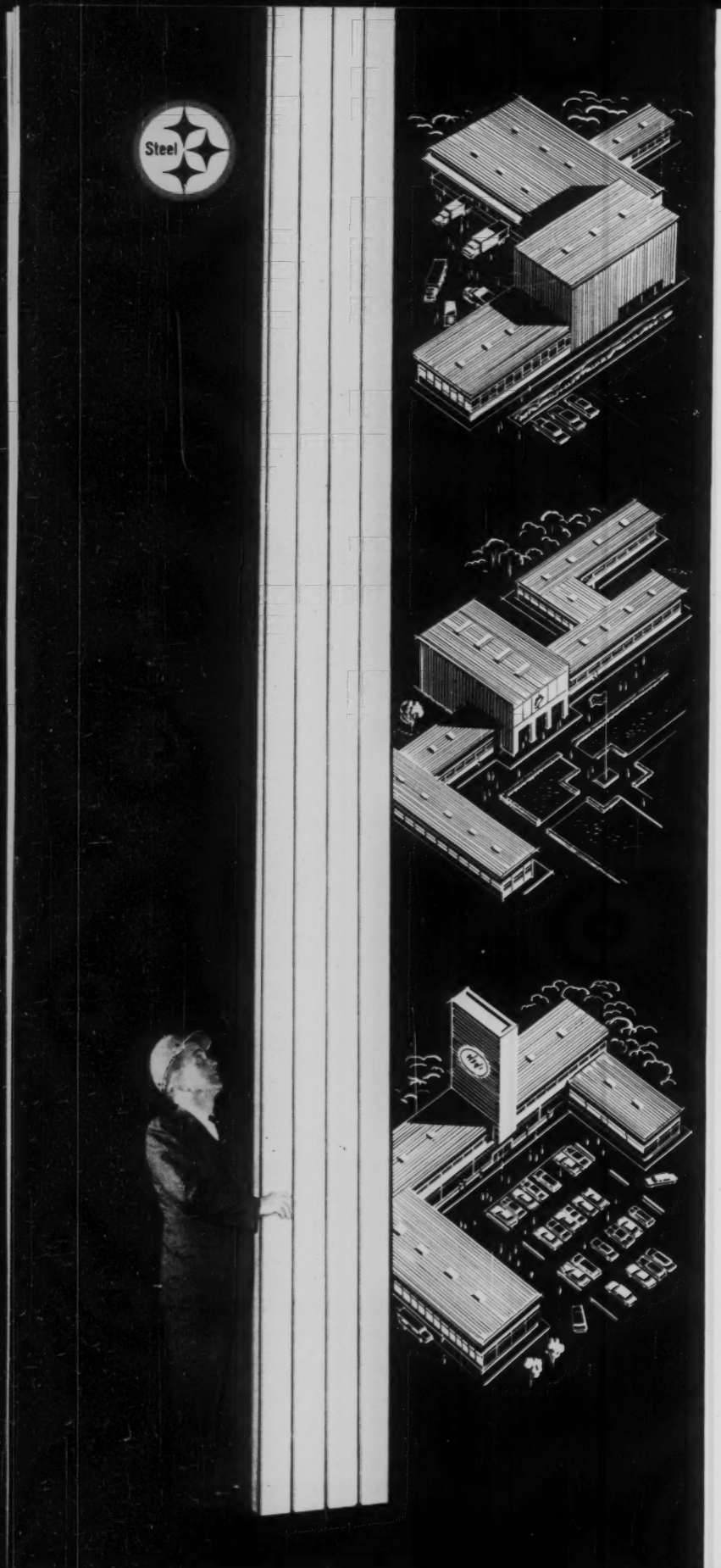
SPECIAL ENGINEERING SERVICE. Darling engineers are ready to work with you in designing special valves to meet unusual service requirements. Write, wire or phone for prompt action.

TRADE DARLING MARK

DARLING VALVE & MANUFACTURING COMPANY
Williamsport 34, Pa.

Sandilands Valve Manufacturing Co., Ltd., Galt 19, Ontario, Canada
Vannes Darling-France, 23 rue du Commandant Mouchotte, St. Mandé, France

GATE • BUTTERFLY • CHECK • SPECIAL VALVES • FIRE HYDRANTS



NOW!
GET STEEL ROOF DECK IN LENGTHS UP TO 50 FEET

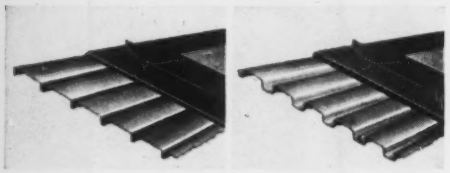
Here's good news for roof deck users! Wheeling's Super-Rib Steel Roof Deck now comes in any length . . . as long as a common carrier can handle it.

CUTS INSTALLATION COSTS! These extra-long lengths mean fewer end laps . . . fewer sheets to handle. And — because Wheeling's new design is so strong — you can now use Wheeling Super-Rib Roof Deck on continuous spans up to 12'-0".

SPECIAL PROTECTIVE COATING! Wheeling's new, improved steel roof decks have outstanding protection against weather, both during and after installation. First, they're Bonderized*; then they're *extra-protected* with a specially developed, roller-coated, baked-on gray vinyl primer!

Get the complete facts on both types of Wheeling Super-Rib Roof Deck . . . and the other fine Wheeling Products shown on the next page . . . from your Wheeling man this week. Or write Wheeling Corrugating Company, Wheeling, West Virginia.

CHOOSE FROM TWO TYPES!



Type "A" has narrow ¾" rib openings for greater adhesive contact . . . use with all types of insulation.

Type "B" has wide 2¾" rib openings for higher carrying capacity . . . use over longer continuous spans.

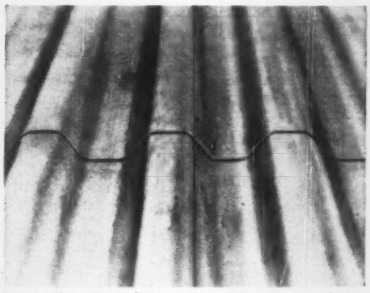
Wheeling
CORRUGATING COMPANY

WHEELING CORRUGATING COMPANY
IT'S WHEELING STEEL! Warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Martins Ferry, Minneapolis, New York, Philadelphia, Richmond, St. Louis.* Sales Offices: *Atlanta, Houston, New Orleans.*

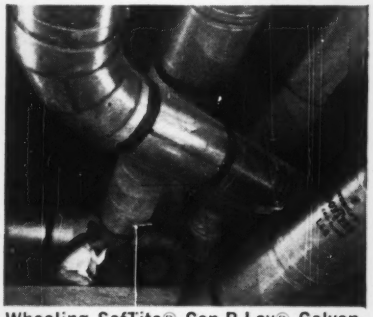
*Registered Trademark of Parker Rust Proof Company

OTHER WHEELING PRODUCTS

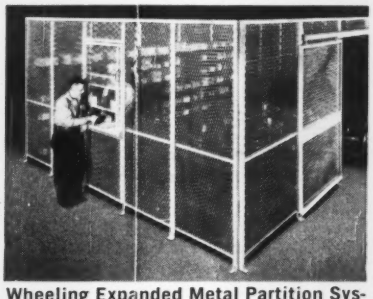
Wheeling Continuous Weld Steel Pipe gives strong, dependable, low-cost service...usually outlasts the building itself.



Wheeling Tensilform®, with conventional or light aggregate concrete, gives structures excellent lateral stability.



Wheeling SofTite® Cop-R-Loy® Galvanized Steel Sheets, for heating and air-conditioning ducts, will not flake or peel under rough use.



Wheeling Expanded Metal Partition Systems prevent pilferage... yet allow free passage of light, heat, air and moisture.

Hauf to Head Luckman's Design, Planning Section

Harold D. Hauf has been named vice president in charge of design and planning for Charles Luckman Associates, large planning-architecture-engineering firm of Los Angeles and New York. He is dean of the School of Architecture at Rensselaer Polytechnic Institute at Troy, N. Y., and a former chairman of the Department of Architecture at Yale University.

Mr. Hauf has been a member of the architectural profession for more than 34 years. Since 1954, he has directed Rensselaer's school of architecture and administered its architectural and building research programs.

With the exception of the war years, he was a member of the Yale University faculty from 1929 to 1949. He resigned as chairman of Yale's department of architecture and professor of architectural engineering in 1949 to become editor-in-chief of ARCHITECTURAL RECORD. During World War II, he headed the Navy's hospital facilities division.

Briefs . . .

Business

Glenn H. Curtis has been named vice president and general manager of Stone & Webster Canada, Ltd., succeeding **Leonard L. Youell,** who has retired. Mr. Curtis, a civil engineer with degrees from the University of Toronto and Harvard Business School, joined the Canadian subsidiary of Stone & Webster in 1955.

Frank Giuliano and **Leon Nadolski** have formed the partnership of Giuliano and Nadolski, consulting engineers, at 700 Montgomery St., San Francisco. Mr. Giuliano, who has been in private practice since 1959, and Mr. Nadolski, formerly with Bechtel Corp., will work in civil and structural engineering.

Jacob G. Kassab has been elected president of Noble J. Dick, Inc., a heavy construction contractor in Pittsburgh. **Noble J. Dick,** founder and former president of the company, becomes chairman of the board.

John Lowry, founder and president of the New York City building company bearing his name, has moved up to chairman of the board. He will be succeeded as president by current vice president **Charles F. Dalton.** The Lowry firm has built many large buildings in the New York area, including the Time & Life Building and several others in Rockefeller Center.

Marvin J. Webster, former chief of hydraulic design and laboratory section of the Portland, Ore., District of the Army Engineers, has joined Harza Engineering Co. He will be hydraulic engineer on technical review of design of projects for improvement of the Indus River in West Pakistan.

Maurice J. Knopf has been elected vice president of F. H. McGraw & Co., New York City engineers and constructors. Former general manager of the firm's redevelopment activities and assistant to the president, he will direct the company's interests in the $50-million Constitution Plaza reconstruction project in downtown Hartford, Conn., and other commercial projects.

Harold K. Pratt has been appointed chief civil and hydraulic engineer for Stanley Engineering Co., international consulting firm based in Muscatine, Iowa. He has been project engineer for the Bechtel Corp. Before that he spent two years on the St. Lawrence River Board of Engineers and 20 years with the Corps of Engineers in the Upper Mississippi Valley Division and the Fort Peck, Garrison and St. Paul districts.

Robert V. Gunther has been named executive vice president of Southwestern Engineering Co. of Los Angeles. He has been with the firm since 1942, lately as vice president and general manager of the engineering and construction division.

R. Dean Collins and **Marcus J. Rice** have formed a consulting engineering partnership at 1622 S. 5th St., Springfield, Ill. They will specialize in civil engineering projects, including design of bridges and buildings.

Walter Hanson, a former member of the engineering faculty of the University of Illinois, has organized Walter E. Hanson & Co. in Springfield, Ill., to specialize in structures, soil mechanics, foundations, dams and related work.

Clinton B. F. Brill, former chairman of the New York State Thruway Authority, is the president of Brill Engineering Corp., a new organization merging the interests of Mr. Brill and the Franklin Engineering Corp. **Ralph C. Roe** will be chairman of the board of the new firm and **Kenneth A. Roe** will be vice president.

Arthur R. O'Neill has been elected a vice president of the George A. Fuller Co. He will direct the engineering and estimating department of the New York City construction firm. Earlier, **Donald F. Byrne** was made a vice president of the firm in its Chicago office.

NO OTHER TRUCK

can power its way thru sandier, muddier going...
haul away bigger, more torturous loads...
yet stay out in front on the road so often!

This giant, diesel-powered "230" model can haul gross combination loads in excess of 100,000 lbs. Extra heavy-duty frame and front end.

INTERNATIONAL®

INTERNATIONAL gets you in and gets you out—fast: Higher average road speed of powerful, true-truck INTERNATIONAL V-8 engines cuts down trip time, picks up as many as *two extra 40-mile round trip hauls per day.* V-8's up to 257 hp; gas Sixes up to 212 hp; diesels with 695 lb.-ft. of torque and up to 262 hp.

INTERNATIONAL pulls you through the heaviest going: Newly-designed, rugged IH through-drive tandem axles handle big payloads without letting you down. Induction-hardened IH axle shafts are up to 10 times more resistant to shock loads . . . eliminate "fan out" and the possibility of fragments in the differential.

INTERNATIONAL carries bigger loads: These new lightweight IH bogies (up to 156 lb. lighter), plus heavy-duty springs and frames, give you bigger payloads, more savings in weight. Three new tandem axles now available, in 30,000, 34,000 and 38,000 lb. capacities. All three are backed by a *100,000 mile warranty!*

Nothing could be more important to an operator working on a ton-mile rate than these proven built-for-work features. See the INTERNATIONAL Truck Dealer or Branch nearest you, for your next tough job. And remember this: INTERNATIONAL has a nation-wide network of sales and service centers to keep you operating. International Harvester Company, Chicago.

Tight Schedule? Get Shipment in 24 Hours! INTERNATIONAL'S unique dump truck pool has models in popular sizes and specifications ready for shipment to you in 24 hours. Your IH Dealer is set up to handle your needs for emergency equipment. Just pick up the phone and call him.

Sure traction underneath your payload. Powerful 6-cylinder INTERNATIONAL R-line models have GVW ratings up to 53,000 lbs.

Power-geared for a more profitable operation. There isn't a tougher, more dependable V-8 built for shortening round-trip time!

TRUCKS WORLD'S MOST COMPLETE LINE IH®

Goldendale School, Washington County, Wis. Architect: William P. Wenzler, Brookfield, Wis.

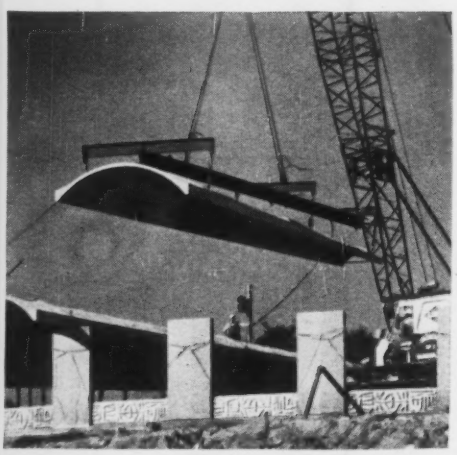
Circular-design school built entirely of concrete for less than $13.20 per square foot!

Near Germantown, Wisconsin, they've replaced the "little red schoolhouse" with a beautiful all-concrete structure of unique circular design. Housing three classrooms, this is the first unit of a projected 8-classroom primary school with auditorium-gymnasium.

The first unit was completed at a cost of less than $13.20 per sq. ft., including all service equipment for the full school. The completed building is expected to cost only $10.00 per square foot.

Concrete's inherent economies make modern design possible at reasonable cost. Thanks to precasting of shell roof elements, costs were reduced and construction speeded. Further economies resulted from the use of precast piers enhanced by the color and texture of exposed aggregate. Precast sculptured panels under the large windows added design interest at low cost. And interior walls are economical concrete block.

Once again, here's proof that where beauty, structural strength and fire-safety must be combined with economic realities—more and more architects and engineers turn to modern concrete construction. Write for free technical data on concrete shell roof design. (U.S. and Canada only.)



To effect circular design of building, precast concrete barrel roof shells are tapered. They are 57 ft. long, 12 ft. wide at one end, 5 ft. wide at other end. Shells are supported by precast piers.

FOR STRUCTURES... MODERN **concrete**

PORTLAND CEMENT ASSOCIATION

Dept. A6-17, 33 West Grand Avenue, Chicago 10, Ill.

A national organization to improve and extend the uses of concrete

Obituaries

Dean Edwards Dies, Of Edwards & Kelcey

Dean G. Edwards has died at the age of 78. He was a partner in Edwards & Kelcey, consultants with headquarters in Newark, N. J.

Mr. Edwards served as chief engineer in the Borough President's Office in Manhattan in the Thirties during construction of the East River (Franklin D. Roosevelt) Drive. During World War II he was chief of the construction branch of the War Production Board.

In Edwards & Kelcey in postwar years, he was active in design and construction supervision of part of the New Jersey and Connecticut turnpikes, the Garden State Parkway and other major highways.

Mr. Edwards served as a director of the American Society of Civil Engineers from 1943 to 1945. He was a graduate of Harvard and a native of Maine.

Oscar Hasbrouck, 78, retired engineer for the New York State Public Works Department. Before his retirement 10 years ago, he was assistant superintendent of operation and maintenance.

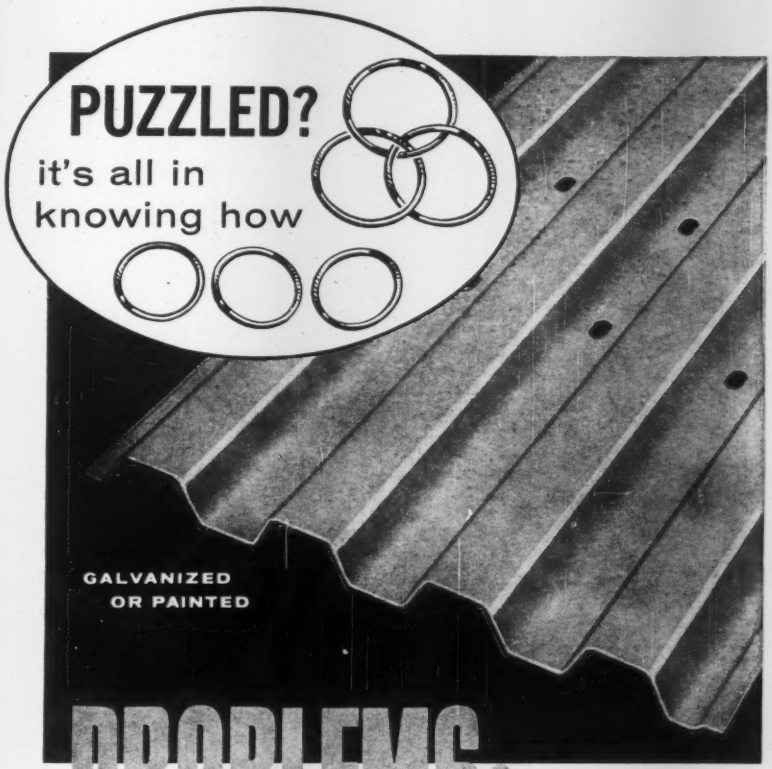
John D. Shattuck, 92, consulting engineer, of Elizabethtown, N. Y. A pioneer in high-pressure interurban gas mains, he was manager of Suburban Gas Co., Philadelphia, for 30 years until it merged in 1929 with United Gas Improvement Co.

James E. Januale, 55, civil engineer and manager of the building division for Johnson, Drake & Piper, Inc., in Buffalo, N. Y. He was a member of the Buffalo Engineering Society.

Adolph Syska, 71, past president of the New York Association of Consulting Engineers. He designed the mechanical systems of United Nations headquarters and other buildings.

Leonard Peller, 49, supervising engineer of United Engineers and Constructors, Philadelphia. He was graduated from Crane College and the University of Illinois.

H. W. Rohl, 74, retired construction contracting and building executive. He built the first three Figueroa St. tunnels in 1930, and also constructed Big Dalton and Puddingstone Dams. He also constructed the Bayshore Highway in San Francisco in 1927.



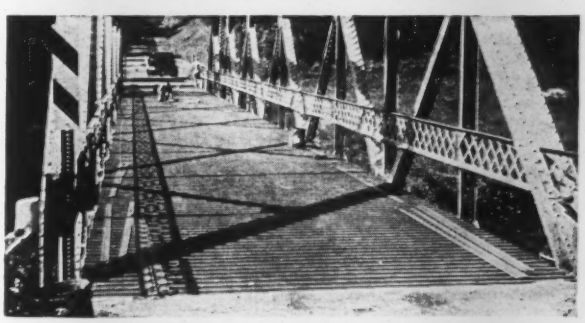
PROBLEMS: practical solution for bridges, overpasses, pile backing—requiring greatest economy, durability and engineered strength.

ANSWERED BY: USF BRIDGE FLOORING

Send for details to:
United Steel Fabricators, Inc., Wooster, Ohio

USF

Highway Guard Rail
Bridge Flooring
Steel Forms for
Concrete Bridge Decks
Corrugated Metal Pipe
Window Wells
Metal Doors & Frames
Metal Buildings



Control concrete setting with J-M Retardwel...

the hot weather admixture that gives up to 50% higher 24-hour strength

Retardwel®, a product of Johns-Manville, world's largest industrial user of portland cement, is the liquid admixture that controls concrete setting time and prevents premature stiffening due to high temperatures *without* loss of early strength.

Retardwel permits a reduction in the water required for proper placing and provides all the advantages of concrete fabricated with a minimum paste content. Its use delays the initial set of concrete and provides a slower rate of heat evolution, thereby minimizing thermal stresses. Thus, the use of Retardwel will aid in eliminating shrinkage cracks. Only 3 ozs. of Retardwel per sack of cement will control setting time (see chart) and still increase 24-hour strength as much as 50%.

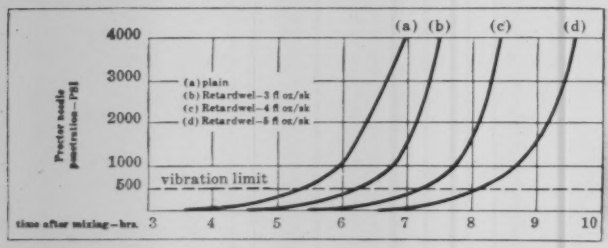
Retardwel's unique properties will also—

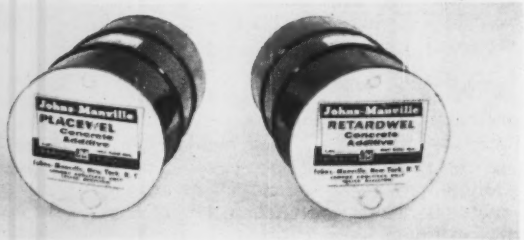
- Increase durability
- Improve dimensional stability
- Increase workability
- Reduce permeability
- Increase density

For normal weather conditions, J-M Placewel® is recommended. Johns-Manville's two concrete admixtures have gained the acceptance of architects and engineers throughout the world. For full information write: Johns-Manville, Box 14, New York 16, N. Y.

JOHNS-MANVILLE
Celite Division

JOHNS-MANVILLE JM PRODUCTS





Alternates on 10 miles of pipe enliven

Florida Water Works Bidding

This $1.2 million water works improvement will boost the capacity and pressure of the existing system by adding an 8 mgd water treatment plant, a 500,000 gal elevated water tank, two new 750 gpm deep wells, and about 10 miles of cast iron pipe distribution line. Russell & Axon, Daytona Beach, Fla., are the engineers on this project for the city of Boynton Beach.

Four separate contracts include the water treatment plant with a $724,990 price, which pulled eleven close bids with Walter Lalley, Inc., Palm Beach, Fla., low. Pitt Construction Co., Pittsburgh, was second with a price $7,010 short of the low. The high was out by 20%.

The elevated water tank award at $93,700 went to Chicago Bridge & Iron Co., Atlanta, Ga., 9% under second low, Pittsburgh Des Moines Steel Co., Atlanta, and 34% under the high of four.

Only $12 separated the two lowest bids for the 750 gpm deep wells, with J. P. Carroll, Inc., West Palm Beach, Fla., at $33,804, taking the award from Richardson Construction Co., Ft. Lauderdale.

The water distribution system contract went to Intercounty Construction Corp., Ft. Lauderdale, for $346,474, 5% under D. M. Papy & Sons, Ocala, Fla., and 38% under the high of ten. Cast iron pipe, federal specification WWP-42 1a, 21/45 was chosen in preference to two alternative types—cast iron pipe 18/40 and asbestos cement.

Wage rates include: skilled, $3.50/hr; semi-skilled, $2.50; common, $1.25; equipment operators, $3.25.

The bidding included:

Water Treatment Plant

1C Walter Lalley, Inc., Palm Beach, Fla.	$724,990
2 The Pitt Const. Co., Pittsburgh, Pa.	732,000
11 The Murphy Const. Co., West Palm Beach, Fla	868,530

Bids: 3-1-61 Items	Unit	Quantity	Unit Prices 1C	2
Water treat plnt, 8 mgd, & all appurt based on major equip & gate vlvs spec; excl of chem feed & storage bldg, CO_2 gen & lime feeder, compl & ready for use	ls	job	$724,990	$732,000

Elevated Water Tank

1C Chicago Bridge & Iron Co., Atlanta, Ga.	$93,700
2 Pittsburgh Des Moines Steel Co., Atlanta, Ga.	103,100
4 R. D. Cole Mfg. Co., Newnan, Ga.	125,480

Bids: 3-1-61 Items	Unit	Quantity	Unit Prices 1C	2
Water tank, elevated steel, 500,000 gal, double-ellipsoidal, compl incl tank fdn, altitude vlv, pipe, etc	ls	job	$93,700	$103,100

Deep Wells

1C J. P. Carroll, Inc., West Palm Beach, Fla	$33,804
2 Richardson Const. Co., Ft. Lauderdale, Fla	33,816
4 Murphey Equip. Co., Decatur, Ga.	42,165

Bids: 3-1-61 Items	Unit	Quantity	Unit Prices 1C	2
Casing, 20"ϕ, drill & ream holes	lf	190	$10.50	$11.13
20" O.D.	lf	150	15.17	16.29
Drive shoe, 20"	ea	2	385.00	398.00
Well casing, 10" I.D. screen, 10"	lf	150	13.06	15.50
	lf	40	54.50	57.77
Gvl packing, betw inner & outer casing	lf	190	11.70	12.06
Wells, develop & conduct pumping tests sterilize & provide water analysis	ea	2	392.00	415.00
	ea	2	65.00	70.00
Pump house, well 6	ls	job	5,910	7,275
well 7	ls	job	5,139	6,000
Well pump, deep, & motor, well 6	ls	job	3,529	1,895
well 7	ls	job	3,529	1,895
Engine, aux, compl w/appur, well 6	ls	job	1,940	2,000
Test well, 6"	ls	job	1,441	1,500
extend below 95", when ordered in writing	lf	...	7.00	7.42
Conc, extra or deleted	cy	...	25.00	43.46
Steel, reinf, extra or deleted	lb	...	0.14	0.13

Water Distribution System

1C Intercounty Const. Corp., Ft. Lauderdale, Fla.	$346,474
2 D. M. Papy & Sons, Inc., Ocala, Fla.	365,253
10 McDonough Const. Co. of Fla., Miami, Fla.	476,428

Bids: 3-1-61 Items	Unit	Quantity	Unit Prices 1C	2
Base bid				
CIP, w/enameline lining, 18/40, 20"	lf	5,530	10.25	10.72
16"	lf	5,384	7.35	8.04
14"	lf	4,381	6.50	6.87
12"	lf	9,965	5.20	5.53
10"	lf	5,846	4.28	4.33
8"	lf	9,584	3.21	3.35
6"	lf	12,672	2.37	2.77
4"	lf	20	2.36	2.38
Alternate 1				
CIP, w/enameline lining, 21/45, 20"	lf	5,530	$10.25	$10.71
16"	lf	5,384	7.35	8.04
14"	lf	4,381	6.10	6.62
12"	lf	9,965	4.68	5.10
10", mech, roll-on rubber ring, or single seal gasket joint	lf	5,846	3.87	3.95
8"	lf	9,584	2.88	3.09
6"	lf	12,672	2.22	2.37
4"	lf	20	2.25	2.35
Alternate 2				
Pipe, asb cmt, 20"	lf	5,530	10.20	10.44
16"	lf	5,384	7.20	7.76
14"	lf	4,381	6.05	6.63
12"	lf	9,965	4.50	4.38
10"	lf	5,846	3.75	3.36
8"	lf	9,584	2.80	2.74
6"	lf	12,672	2.10	2.13
4"	lf	20	2.00	2.35
GIP 2"	lf	20	1.05	1.25
CI ftg & specials	t	51.2	505.00	400.00
Vlv, gate & vlv boxes 20"	ea	8	1,352	1,249
16"	ea	8	863.00	899.48
14"	ea	14	650.00	698.45
12"	ea	6	172.00	205.84
10"	ea	20	139.00	158.86
8"	ea	22	92.00	111.75
6"	ea	72	63.00	79.14
4"	ea	21	51.00	61.95
3"	ea	5	42.00	55.98
2	ea	57	18.00	35.00
10"	ea	9	100.00	45.00
8"	ea	1	80.00	45.00
6"	ea	51	50.00	35.00
4"	ea	17	40.00	25.00
Cut-ins to existing mains, 3" & 2"	ea	40	20.00	25.00
Connections, simple, to existing pipe	ea	10	25.00	15.00
Hydrants, fire	ea	23	143.00	140.00
reconnect existing	ea	29	40.00	45.00
Connect new services	ea	40	10.00	10.00
Reconstruct exist services	ea	76	15.00	15.00
Pipe & ftgs, copper service, 1"	lf	1,200	1.00	1.00
GIP, service, 1½"	lf	25	0.90	1.00
Taps, in water mains, 2"	ea	44	10.00	16.00
Crossing, hwy at S.E.2nd Ave & U.S. Hwy #1	lf	60	13.00	13.00
RR at N.W.2nd Ave	lf	110	25.00	31.00
RR at S.E. 2nd Ave	lf	110	32.50	31.06
Pipe, existing, remove & salvage, 6"	lf	15,860	0.40	0.50
4"	lf	5,815	0.45	0.40
Bit pvt, replace	sy	3,585	1.78	2.50
Conc pvt, replace	sy	140	6.00	9.00
sidewalk, replace	sy	25	4.50	4.00
Curb & gutter, replace	lf	10	1.85	2.00

* alternate 1 accepted

ENR Construction Cost Index (1913=100) 20-cities average —834.16

Louisiana Water Main Job Attracts 19 Close Bids

Low mechanical joint cast iron pipe prices were the key to C. L. White's successful low of $98,854 for this water main extension contract. White, of West Monroe, La., bid low for both mechanical and slip type joint alternates.

The slip joint prices were $0.15 and $0.13 a foot lower, but the owner chose the mechanical joint alternate at $3.25 for the 8 in. and $2.40 for 6 in. pipe because of satisfactory past experience. Hemco Engineers, Memphis, Tenn., are the consultants on this job for the town of Winnsboro, La.

Nineteen bids were entered in this close race; only $3,050, 3% separated the low and second low, E. N. Murray Construction Co., Buena-Vista, Ga.

C. L. White's bid of $3.25 for 10,800 lf of mechanical joint cast iron pipe was $0.09 under the closest low unit bid and $1.65 under the high. For 15,500 lf of 6 in. pipe, White was $0.06 to $1.35 low.

Wage rates include: common $2.00/hr; bricklayer, $4.00; carpenter, $3.35.

The bidding included:

1C C. J. White Contr., West Monroe, La.	$98,854
2 E. N. Murray Const. Co., Buena-Vista, Ga.	101,904
19 M & L Const. Co., Kaplan, La.	146,738
EE Hemco Engineers, Memphis, Tenn.	116,000

Bids: 2-28-61 Items	Unit	Quantity	Unit Prices 1C	2
Mechanical Joint Pipe Alternate				
CIP, 8"	lf	10,800	$3.25	$3.34
6"	lf	15,500	2.40	2.46
Bell-Tite Pipe Alternate				
CIP, 8"	lf	10,900	3.10	3.23
6"	lf	15,500	2.27	2.38
Items Common to Both Alternates				
CIP, mechanical jt, 2"	lf	1,000	1.23	1.05
Pipe, water service	lf	400	0.90	1.25
CIP, bored & jacked in pl 8"	lf	75	6.63	6.00
6"	lf	100	4.86	6.00
House services, bored & jacked in pl	lf	100	1.40	1.50
Connect to exist water main	ea	9	30.00	50.00
Vlvs, gate & vlv boxes, 8"	ea	13	100.00	110.00
6"	ea	31	70.00	72.00
2"	ea	3	43.00	40.00
Water services accessories, set/house	ea	30	32.00	18.50
Hydrants, fire	ea	41	167.00	170.00
CIP ftgs	lb	15,000	0.25	0.29
Vlv installation, air-release	ea	1	225.00	230.00
Replacement conc drive or sdwk	sf	14,000	0.40	0.50
conc pvmt	sy	20	8.00	6.00
bituminous pvmt	sy	500	3.50	2.40
Gravel, for temporary pvmt or drives	t	100	4.00	4.25
Conc encasement & /or thrust blocks	cy	50	20.00	25.00
Creek crossing, extra	ea	4	100.00	200.00
Water meters & meter box allowance addendum #2	ls	job	3,000	3,000
Pipe, in casing, bored & jacked in pl, 8"	lf	80	11.50	14.00

Completion time: 60 calendar days

ENR Construction Cost Index (1913=100) 20-cities average —834.27

Materials Prices Monthly Market Quotations By ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, May 18; Next, June 22.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, May 25; Next, June 29.
- Water Rates, Building Board, Lath, Insulation: Last, June 1; Next, June 29.
- Cement Aggregate, Ready Mixed Concrete, Asphalt: Last, June 8; Next, July 6.

Iron and Steel Products–F. O. B. Warehouse, Per 100 lbs., Base Price

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles‡#	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
Struct. shapes	Cwt	$.801-.8.36EsV	$9.70	$9.00ty	$8.00-9.30 8.00-9.30KzsV	$7.07-8.34ysV,	$7.64-8.91styV	$7.46-8.73tysV	$7.71-9.49MsV	$8.24cK	$7.64-8.91MsV	$9.90sT	$8.70-10.45ktsV	$7.78-8.17ysV		$8.40-9.13Vzs	$7.35-8.40zsV	$7.07-8.34syV	$7.30-8.57stxyV	$9.40-11.25zsV	$8.60-10.80aDsV	$7.90-8.60CF/8.20-8.90AiF	$9.20H
Reinf. bars, new steel	"	8.50	9.00T	8.51-9.94tyV	8.75t	6.75-6.90guV	8.16t#	6.70ct	8.50	9.35	7.37	8.21N	7.35frt	9.26T	$8.00gktz	8.60ty	8.43uy	7.35y	7.35#txyQ	8.25jS	8.85DM	7.00-7.50FGi	7.25
Reinf. bars, rail steel	"			8.51-9.94tyV	8.75t	6.75-6.90guV			8.50		11.85			9.26T		8.60y	9.30y		7.35#txyQ			7.00-7.50FGi	7.25
Expanded metal lath k std. diamond mesh, 3.4 lb	"	43.50	44.50	61.00pK	47.00K	52.00#U	44.50Kg	42.50KL	44.00u	51.17n	67.00 O	51.00	55.00S	44.50K	63.00K	50.00n	45.50#U	58.50#rw	64.00wxK	53.00S	67.00#nD	65.700h	49.50qI
std. ribbed, 3.4 lb..	"	48.00S	49.00	67.00pK	51.00K	63.00#U	48.50mnKg	46.50KL	48.50w	56.35n	74.00 O	55.56	64.00S	49.00K	69.60K	58.00no	50.00#U	64.50#rw	65.00wxK	58.00S	73.50#nD	70.20h	44.85qI

Reinforcing Bar Extras, per cwt, N. Y. •Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000-1999#, +$1.50; 2000-4999#, +$1.20; 5000-9999#, +90¢; 10,000-19,999#, +60¢; 20,000-29,999#, +30¢; 30,000-39,999#, +10¢; 40,000# & up, none. •Size†: #2 +$2.50; #3 +$1.40; #4 +$1.00; #5 +70¢; #7, #8, #9, #10, #11 +50¢ •Bending: heavy, +90¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). •Engineering (details and placing from designs by others): over 500 tons, +45¢; 200-499 tons, +50¢ but not over $4500; 75-199 tons, +65¢ but not over $2000; 20-74 tons, +75¢ but not over $975; 5-19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +80¢.

Structural Shape Extras, per cwt, Chicago, Cincinnati, Cleveland, Dallas, Detroit, New York, Philadelphia, St. Louis and Pittsburgh. Item; 10,000# and over, base, 5,000-9,999#, +10¢, 2,000-4,999#, +35¢, 1,000-1,999#, +85¢, 400-999#, +$1.75, 100-399#, +$1.75, under 100#, +$1.75. Order: 20,000# and over, base, 10,000-19,999, +25¢, 5,000-9,999, +65¢ 2,000-4,999, +$1.50, 1,000-1,999, +$2.50, 400-999, +$4.00, under 400, +$8.00. Item extras do not apply in Chicago, Cleveland, Cincinnati, Detroit and St. Louis. ‡ Delivered. •* Aver. of Canadian & American. •# add 4% sales tax. •a 2000-4999#. •b 10,000-19,999#, fob city. •c 20 tons or over. •d 10,000-29,999#. •e Intermediate struct'l. •f incl. delivery in free zone. •g CL. •h list price; dominion tax exempt; add provincial and municipal taxes. •i add provincial and municipal sales taxes. •j intermediate and hard grade. •k fob city. •l delivered; contractor to do unloading. •m copper alloy. •n LCL. •o asphalt coated. •p 500 sq yd. or more. •q 2.5 lb. •r less 2% disc. for cash. •s 10,000# item in 20,000# order. •t less ½% disc. 10 days. •u add 10¢ switch. •v incl 15¢ del. •w truck lots. •x add 2% sales tax. •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D ½% for cash. •E 30,000# or over. •F Federal tax exempt for bidgs. •G add 10¢ del. •H $8.85 without tariff charges. •I 3 lb $60.00. •J 4 lb $47.50. •K less 2% disc. 10 days. •L F.o.b. Youngstown plant. •M 5,900-9,999#. •N 2,000-19,999#. •O 100 sy lots. •Q 5 tons to CL. •R revised. •S less 2% disc. 10th. •T less ½% disc 10th of mo. •U less 2% disc. 10 days. •V varies according to type and size.

Iron and Steel Products–Base Mill Prices Carlot Quantities

Item	Unit	Birmingham area	Chicago area	Pittsburgh	Buffalo area	Cleveland	Youngstown area	Geneva	Los Angeles	Pueblo
Struct. Shapes	cwt	$5.50	$5.50	$5.50	$5.50			$5.50	$6.20	
Plate Carbon Steel	"	5.30	5.30	5.30	5.30			5.30		
Reinf. Bars (billet)*	"	5.675	5.675	5.675	5.675	$5.675	$5.675		6.375	
Rivets, ½" struct	"	12.25	12.25	12.25	12.25	12.25				
Sheet Piling (base)	"		6.50	6.50	6.50	6.50			6.50	
Steel Rails, standard	Ton	110.50	110.50	110.50	110.50					
light	"	130.00	130.00	130.00	130.00					
Track Supplies										
Angle bars	cwt	6.975	6.975	6.975	6.975					$6.975
Std. spikes	"	9.75	9.75	9.75	9.75		9.75		9.75	9.75
Tie plates	"	6.60	6.60	6.60	6.60				6.875	6.60
Track bolts	"			14.75	14.75	14.75				

* Fairless Works, $5.825 Revised.

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	2½ & 3 in.,* Black %	2½ & 3 in.,* Galv. %	3½ to 6 in.,* Black %	3½ to 6 in.,* Galv. %
Lorain, Ohio	13.75	+3.50	+1.75f	+19.50f
Aliquippa, Pa.	13.75	+3.50	3.25a	+14.50a
Sparrows Pt., Md.	17.25	+List		
Benwood, W. Va.	13.75	+3.50		
Youngstown, O.	13.75	+3.50	3.25	+14.50a
Indiana Harbor, Ind.	12.75	+4.50	2.25ab	+15.50a
Sharon, Pa.	13.75	+2.50	3.25ab	+13.50ab
Wheatland, Pa.	13.75	+3.50	3.25a	+14.50a
Etna, Pa.	13.75	+3.50	.50de	
Fontana, Calif.	0.75	+16.50b	+9.75ab	+27.50ab

* Threaded and coupled: a 3½ to 4 in. b to 1, 5 and 6 in. c 6 in. d Seamless 5 in.

WROUGHT STEEL PIPE, butt or continuous weld: Deduct (+) or add (−) these "discounts" from or to the following carlot list prices to get mill prices. Price per ft. (based on approx. $200 per net ton): 2½ in., 58½¢; 3 in., 78½¢; 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight for destination price.

WROUGHT IRON PIPE, lap weld: List prices per ft. same as for wrought steel pipe, but add these "discounts" to get Pittsburgh mill price. 2½ to 3 in., black 106%; galv. 139%; 4 to 6 in., black 103%; galv. 133%. Add freight for destination price.

WELDED FABRIC REINFORCING, FOB Joliet, Ill., Donora, Pa., Monessen, Pa. mill, per 100 sq. ft.: 4 x 18 in., No. 5 & 10 wires ... $7.04; 4 x 12 in., No. 8 & 12 wires ... $2.62; 6 x 8 in., No. 6 & 6 wires ... $4.17

Plumbing, Heating, Water, Sewer Pipe and Tubing

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles‡#	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
C. I. Pipe Price Index	a	130.6	140.2	125.8	143.2	140.0	135.6	141.8	137.9	145.1	142.1	138.6	148.6	145.0	132.4	138.6	137.9	142.9	135.7	148.6	149.0		
Asbest. Cem. Pipe, 6" V	lin. ft.	$1.51	$1.51	$1.51	$1.51	$1.51	$1.63	$1.63	$1.59	$1.59	$1.51	$1.51	$1.59	$1.51	$1.51	$1.51	$1.51	$1.51	$1.48	$1.59	$1.59		
6" transite pipe V	" "	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.59	1.51	1.51	1.59	1.51	1.51	1.51	1.51	1.51	1.51	1.59	1.51		
Asbest. Cem. Pipe, 12" W	" "	2.36	2.19	2.26	2.19	2.19	2.19	2.19	2.26	2.36	2.19	2.26	2.19	2.26	2.26	2.19	2.19	2.19	2.26	2.19	2.19		
12" transite pipe W	" "	2.48	2.30	2.37	2.30	2.30	2.30	2.30	2.37	2.48	2.30	2.37	2.30	2.37	2.37	2.37	2.30	2.30	2.30	2.37	2.30		
Clay Sewer Pipe																							
8 in. ASTMC 13-55	ft.#	0.58r	0.665	0.50r	0.84qrtL	0.93rm	0.59	0.66BCN	0.575#B	0.56nr	0.97nk	0.62r	0.82bl	1.05oB	0.566r	0.94	0.75	0.94K	0.62r	0.86#d	0.88bk	1.13u	0.76F
12 in. "	"	1.14r	1.20	0.95r	1.55qrtL	1.78rm	1.14	1.27tBC	1.09#B	1.00nr	1.86nk	1.125r	1.78blS	1.90oB	1.078r	1.76	1.44#	2.01K	1.23r	1.86#d	1.86kb	2.00u	1.43F
24 in. ASTMC 200-55T	"	4.88r	3.05	4.14rw	6.39qrtM	7.52rm	4.95	8.47tBC	4.75#B	4.98r	7.48nk	6.324lw	7.19blS	8.00oB	5.65r	12.89	9.40#v	8.79K	5.10r	7.53#d	7.61k	7.00u	5.70F
36 in. "	"		12.71	13.50rw		21.16rm	14.35	23.45tBC	10.53#bB		19.95nk	16.86r	16.90blS			35.61	25.57#v	24.15K	12.95rS	18.00#d		13.50u	
Clay Drain Tile 6 in. V	M ft.	200.00sr	187.80	295.00rx	244.00r	220.00Br	177.50	179.40mBC		460.00nr	212.00mk	315.00r	410.00lS		240.50pr	240.81	230.00#	190.00	180.00r	360.00#l	260.00ck	288.00	175.00F
8 in. V	M ft.		289.20	430.00rx	348.60r	330.00Br	274.60	276.60mBC		640.00nr	327.00mk	625.00r	590.00lS		566.00	369.84	350.00#	295.00	300.00r	620.00#l	135.00	545.00	290.00F
Concrete Sewer Pipe, 12"	ft.#U	0.95mKr	1.01	1.75rS	1.58S	1.30	0.85rA	1.35	1.27BD	1.05m	1.40k	1.68r	1.30vE	2.19DFH	1.41ilR	1.50#B	1.50#h	1.66DB	1.25i	105.00#Q	1.90ky	1.17D	1.27F
24 in.	ft.#U	3.75mKr	2.75	2.75rS	3.60S	4.00	3.25rA	2.40P	2.95BD	3.50m	5.23k	4.20r	3.85fvE	6.31DFH	3.76il	3.60#B	5.50#h	3.93DB	4.05	3.30#Q	4.50ky	3.11jpD	5.19F
Copper Water Tubing																							
3/8", Type L	ft.	0.1480	.....	0.1650	0.1420	0.1420	0.1680	0.1480	.....	0.1680	0.1588	0.1310	0.1480	0.1620	0.1680	0.1480	0.1570	.....	0.1420	0.1480	0.1450	0.2089U	0.3259UV
1/2", Type L	"	0.1670	.....	0.1840	0.1630	0.1630	0.1900	0.1670	.....	0.1900	0.2210	0.1480	0.1670	0.1840	0.1900	0.1670	0.1700	.....	0.1630	0.1670	0.1640	0.2450U	0.3643UV

•† Extra quality. •‡ delivered. •# ad 4% sales tax. •a PRICE INDEXES or CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S. PIT CAST IRON PIPE: F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. •b Extra strength. •c 4-in., $130. •d SS361-A. •f 21 in. •g culvert pipe; reinf., ASTM C 75-56. •h reinf., ASTM C 75-54. •i reinf., ASTM C 76-55. •j centrispun. •k less 2% disc. for cash. •l fob plant. •m truck del. •n LCL del., fob truck. •p less 5% disc. 10th. •p freight allowed to destination in city. •u 35,000# minimum. •r less 2% disc. 10 days. •s 1 ft lengths. •u CSA A 60. •v standard strength. •w SS; add 20% for d.s. •x fob city. •y Reinforced. •z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. •A single strength. •B truckload. •C less 2% disc. 15th. •D ASTM 76-57. •E less 1% disc. 10 days. •F less 2% disc. 30 days. •G LCL. •H CL. •I fob origin, freight allowed. •J reinf. B14-15. •K Less 2% disc. 15 days. •L ASTM 13-57. •M ASTM 200-57. •N 2 ft lengths. Trucklots. •O add 2% Sales Tax. •P 18 in. •Q less 1% disc. 10th. •R revised. •S ASTMC 72, 12" 1.55, 24" 4.00. •T Second price transite pipe. •U Type K. •V including 11% sales tax, less 20% in lots under 6,000 ft.

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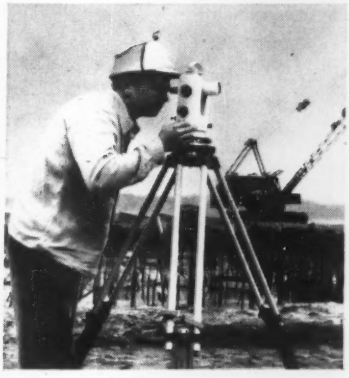

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Cast-in-place concrete wales brace cofferdam

STEEL SHEETPILING and 65′ H-beam soldier beams, spaced 7′ c-c, were driven before excavation. Timber lagging increased from 3″ thick for the top 20′, to 4″ for the next 10′ and 6″ thick to the bottom of the 64′ deep pit. Contractor: W. L. Hailey & Co., Nashville, Tenn. Designers and consultants: Metcalf & Eddy, Boston, Mass.

CIRCULAR RIBS, 101′ in diameter, were cast-in-place as the excavation reached their levels. Each was reinforced with four No. 6 bars in both the inside and outside faces, and No. 4 bar stirrups at 6′ c-c. 5′ thick base slab for pumping station and forms for lower walls show at bottom.

Six 3′ wide x 2′ thick circular reinforced concrete wales, cast-in-place, proved a successful new way to support the 101′ diameter, 64′ deep cofferdam for a sewage pumping station in Louisville.

Sheetpiling and soldier beams were driven before excavation. During excavation, timber lagging was inserted against the face of the cut. At 17′ below ground level, the first ring was cast. When the concrete, designed for 3,000 psi at 7 days, had reached 2,500 psi in the first ring, excavation proceeded to 27′ depth for the second wale. Remaining wales are at 36′, 39′, 50′ and 55′.

Each wale required 75 cu. yd. of ready mixed concrete. Four 2 cu. yd. buckets, handled by two cranes, placed the material. While one bucket was pouring, the other was being charged from the truck mixers. Felt layers between wales and soldier beams prevented bond.

During backfilling, the concrete wales on each side of the sheetpiling were severed so that soldier beams could be pulled without strain on the sheetpiling and pump station structure.

Concrete for cofferdam and pumping station totalled 4,140 cu. yd. On-schedule deliveries, including one 810 cu. yd. pour in 14 hours, were maintained by truck mixers of certified design, capacity, mixing speed and water control accuracy.

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9 CUBIC YARD
MIXER
MAXIMUM CAPACITY
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UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE
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Challenge—Cook Bros., Inc.
Los Angeles, Calif.
Concrete Transport Mixer Company
St. Louis, Mo.
Construction Machinery Company
Waterloo, Iowa
Hercules Galion Products, Inc.
Galion, Ohio
The Jaeger Machine Company
Columbus, Ohio
The T. L. Smith Company
Milwaukee, Wis.
Whiteman Manufacturing Company
Pacoima, Calif.
Willard Concrete Machinery Co., Ltd.
Lynwood, Calif.
Worthington Corporation
Plainfield, N. J.

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Fitchburg**—BA 6/30—Commonwealth Mass., Dpt. Educ., Div. Bldg. Constr., 38 Chauncy St., Boston, E-59-18 Contr. No. 1, LIBRARY, ADMINISTRATION, SCIENCE and AUDITORIUM, State Teachers College. $1,853,600. Plans deposit $100. Samuel Glaser & Assoc., 234 Clarendon St., Boston, archts. CD 2/5/59.

▲ **Mass., Hyannis**—BA 7/11—Cape Cod Hospital, 27 Park St., HOSPITAL ADDN., ALTERATIONS, south side present hospital. $1,500,000. Plans deposit $50. Perkins & Will, Inc., 55 Church St., New York, N. Y., archt. Garfinkle & Marenberg, 100 W. 42 St., New York, N. Y., struct. engrs. CD 4/21/61.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. Y., New York**—BA 6/28—Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York Zone 7, Contr. 1, structures and equipment; Contr. 2, electrical work; Contr. 3, plumbing work; Contr. 4, heating and ventilating, Hunts Point POLLUTION CONTROL PROJ. EXTENSION, Bronx Boro. Extended date. Plans deposit $80. CD 5/9/61.

BUILDINGS—BA

▲† **Md., Aberdeen Proving Ground**—BA 6/20—U. S. Eng., 24 St. and Maryland Ave., Baltimore, Zone 18, 3 story, 275 x 360 ft. rein.-con. fdns., frame, brick facing steel roof joists, precast concrete roof deck U. S. Army HEALTH FACILITY and 1 story, 45 x 71 ft., HEATING PLANT, utilities, ENG-18-020-61-31. $2,500,000-$3,000,000. CD 8/1/60.

▲ **N. Y., Levittown**—BA 6/20—Levittown P. School Dist., North Village Green, Levittown, 2 story Division Ave. SCHOOL ADDN. $1,848,000. Office of Louis Jallade, 597 5 Ave., New York 17, N. Y., archts. Kallen & Lemelson, 1860 Broadway, New York 23, N. Y., mech. engrs. Fraioli-Blum-Yesselman, 250 E. 43 St., New York 17, N. Y., struct. engrs. CD 4/5/61.

▲ **Pa., Aliquippa**—BA 7/6—Pa. Public School Bldg. Authority, 101 S. 25th St., Harrisburg, SECONDARY HIGH SCHOOL, for Hopewell-Independence-Raccoon Jt. School Board. $2,500,000. Plans deposit $100. J. F. Bontempo, 115 Shields St., Rochester, archt. CD 10/7/59.

▲† **Pa., Phila.**—BA 6/28—Dist. Pub. Wks. Office, 4th Naval Dist., 400 units CAPEHART HOUSING, Naval Base, IFB 30891-618. $6,600,000. Extended date. Bellante & Clauss, Suburban Bldg., 1617 Penn Blvd., Zone 3, archts. CD 5/12/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Cayuga Constr. Corp.**, 30 Vesey St., New York 7, N. Y. and **Johnson Drake & Piper, Inc.**, 86 Trinity Pl., New York 6, N. Y., LB **$7,931,000**, (5 bidders), Part of RAPID TRANSIT RAILROAD, Section No. 13, Rte. No. 101, 6 Ave. W. 19 to W. 31 Sts., Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. BA 6/2. CD 4/24/61.

BUILDINGS—LB & CA

▲ **Mardan Constr. Corp.**, 84 Fifth Ave., New York 11, N. Y., CA Est. **$10,000,000**, 3 story, 400,000 sq. ft. BAKERY, Avery Ave. and Lawrence St., FLUSHING, N. Y. Wareback Realty Corp., 90-40-160 St., Jamaica, N. Y. Massimo Francis Yezzi, 14 Station Sq., Forest Hills, N. Y. and Aquaro-Gross, 1921 Chestnut St., Phila., Pa., archts. Abrahams, Hertzberg & Cantor, 207 E. 37 St., New York 16, N. Y., struct. engrs. Great Atlantic & Pacific Tea Co., lessee.

▲ **Joseph P. Blitz, Inc.**, 545 Madison Ave., New York 22, N. Y., CA **$7,178,000**, fdns. and general contract (concrete), Proj. No. NYC-36, Mary K. Simkhovitch HOUSES, Henry St., Scammel St., Madison St., Gouverneur St., Water St., Jackson St., Franklin D. Roosevelt Dr. and Montgomery St., NEW YORK, N. Y. New York City Housing Auth., Rm. 1002, 299 Broadway, New York 7, N. Y. Grand total $10,151,323. BA 5/16, CA 6/5. CD 5/18/61, under LB;
Afgo Engineering Corp., 475 Adelphi St., Brooklyn 17, N. Y., CA **$721,631**, heating and ventilating (concrete) Mary K. Simkhovitch HOUSES (New York, N. Y.);
Herman H. Schwartz, Inc., 97-11 Sutphin Blvd., Jamaica, N. Y., CA **$763,600**, electric (concrete) Mary K. Simkhovitch HOUSES (New York, N. Y.);
A. Rosen & Son, 211 E. 117 St., New York 35, N. Y., CA **$988,800**, plumbing, (concrete) Mary K. Simkhovitch HOUSES (New York, N. Y.);
Westinghouse Electric Corp., Elevator Div., 1271 Ave. of Americas, New York 19, N. Y., CA **$499,292**, elevator (concrete) Mary K. Simkhovitch HOUSES, (New York, N. Y.).

▲ **H. R. H. Constr. Corp.**, 579 5 Ave., New York, N. Y., LB Est. **$7,000,000**, 12 story OFFICES ADDN. to 8 story bldg. and alterations, NEW YORK, N. Y. 50 W. 44 St. Bldg. Corp., 50 W. 44 St., New York 19, N. Y. BA 6/1. CD 5/31/61.

▲ **S. S. Silberblatt, Inc.**, 25 W. 45 St., New York 36, N. Y., LB **$10,044,000**, (7 bidders), fdns. and general contract Franklin D. Roosevelt HOUSES, Proj. No. NYC-35, E. 6 St., Avenue A, E. 2 St. and 1 Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., Rm. 312, 299 Broadway, New York 7, N. Y. BA 6/2, CD 5/22/61;
Harry Starkman & Bros., 348 Brook Ave., New York 54, N. Y., LB **$1,125,000**, (5 bidders), heating and ventilating Franklin D. Roosevelt HOUSES, Manhattan Boro (New York, N. Y.);
Spitzer Elec. Co., Inc., 60 W. 18 St., New York 11, N. Y., LB **$1,098,000**, (7 bidders), electrical work Franklin D. Roosevelt HOUSES, Manhattan Boro (New York, N. Y.);
Jarcho Bros., Inc., 38-18 33 St., Long Island City 6, N. Y., LB **$1,000,513**, (6 bidders), plumbing, Franklin D. Roosevelt HOUSES, Manhattan Boro (New York, N. Y.);
Westinghouse Elec. Corp., Elevator Div., 1271 6 Ave., New York 19, N. Y., LB **$551,242**, (6 bidders), elevators Franklin D. Roosevelt HOUSES, Manhattan Boro (New York, N. Y.).

▲ **Quaker Ridge Estates Corp.**, c/o Elo Constr. Corp., Rte. 25A, Stoney Brook, N. Y., Owner Builds, Over **$9,000,000**, 400 HOMES, Nassakeag Ridge, Pond Path, Rte. 25A, STONY BROOK, N. Y.

▲ **Salem Hill Homes**, c/o I. J. Kislak Agency, 581 Broad St., Newark, N. J., Owner Builds, **$4,000,000**. 300 HOUSES, Aldrich Rd., Howell Twp., FARMINGDALE, N. J. Silberstein & Silberstein, 24 William St., Newark, N. J., archts.

▲ **McCloskey & Co. Builders**, 1620 W. Thompson, Phila., Pa., CA Est. **$12,000,000-$15,000,000**, 22 to 25 story 400,000 sq. ft. OFFICE, Baltimore, Charles and Fayette Sts., BALTIMORE, MD. Jacob Blaustein, American Bldg., Baltimore 2, Md. and McCloskey & Co., 1620 W. Thompson, Phila., Pa. Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., archt.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **LOUISIANA**—BA 7/7—Ascension—St. James Bridge and Ferry Auth., Hotel Donaldson, 508 Mississippi St., Donaldsonville, La., BRIDGE,
constr. duu substructures for Mississippi River Bridge and approach spans located near Donaldsonville, from and incl. abutment number 0 (complete with Wingwalls) to and incl. abutment number 1 (complete with wingwalls) having face of backwalls at Stations 3938 plus 04 and 4029 plus 06 respectively; all as described in plans and specifications. Plans deposit $200. Palmer & Baker Engineers, Inc., Rm. 309 California Co. Bldg., 1111 Tulane Ave., New Orleans 12, La. 2460 Government Blvd., Mobile, Ala. and 2461 Wisconsin Ave., N.W., Wash., D. C., consult engrs.

▲ **LOUISIANA**—BA 7/7—Ascension—St. James Bridge & Ferry Auth., Hotel Donaldson, 508 Mississippi St., Donaldson, La., BRIDGE,
furnishing, erecting and field painting of superstructure comprising all structural steel and misc. metalwork filled steel grid bridge deck rein.-con. bridge deck, curbs and railings, navigation and obstructure lighting and incld. apurtenances for Mississippi River Bridge located near Donaldsonville, from Station 3938 plus 04 to Station 4029 plus 06 on substructure provided by others. Plans deposit $200. Palmer & Baker Engineers, Inc., Rm. 309, California Co. Bldg., 1111 Tulane Ave., New Orleans 12, La., 2460 Government Blvd., Mobile, Ala. and 2461 Wisconsin Ave. N. W., Wash., D. C. consult engrs.

▲ **Ky., Newport**—BA 7/25—City, 4th and York Sts., 10½ m.g.d. WATER TREATMENT PLANT. Total est. $2,500,000. Water Imprvt. Program. CD 1/7/54.

BUILDINGS—BA

▲ **Ala., Montgomery**—BA 6/22—Industrial Development Bd. of Montgomery, 723 N. Perry St., 100,000 sq. ft. MEAT PACKING PLANT, $2,000,000. Henschien, Evards & Crombie, 59 Evanburn, Chicago, Ill., archts. Frosty Morn Packing Co., 703 Howe St., lessee. CD 5/17/61.

BUILDINGS—LB & CA

▲ **J. W. Daniel Constr. Co., Inc.**, 3232 Riverside Dr., Danville, Va., LB **$2,509,000**, (6 bidders), LIFE SCIENCE BLDG., University of Virginia, CHARLOTTESVILLE, VA. State Dpt. Educ., State Office Bldg., Richmond, Va. Ballou & Justice, 300 West Franklin St., Richmond, and Stainback & Scribner, 112 3rd St. N. E., Charlottesville, Va., archts. BA 6/1/61. CD 4/21/61.

▲† **Smith and Turley, Inc.**, 1955 Poplar Ave., Memphis, Tenn., LB **$3,800,000**, 250 units CAPEHART HOUSING, U. S. Naval Air Station, NBy 37680, MEMPHIS, TENN. Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C. BA 6/2/61. CD 4/24/61.

▲ **Kaiser Aluminum & Chemical Corp.**, Kaiser Center, 300 Lakeside Dr., Oakland 12, Calif., Owner Builds, five stand TANDEM COLD ROLLING MILL for light gauge aluminum, RAVENSWOOD, W. VA. Kaiser Aluminum Fabricating Engineering Div., Kaiser Center, Oakland, Calif., engrs.

MIDDLE WEST

BUILDINGS—BA

▲ **Ill., Chicago**—BA 7/6—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, CHA Proj. Ill. 2-37, Stage IV, eight 16 story, 1,261 unit APARTMENTS underground utilities, site imprvs., area bounded by W. 51st St., S. State St., W. 54th St. and railroad right-of-way, west of S. Federal St., Plans deposit $75. Shaw, Metz & Assocs., 208 S. LaSalle St., Chicago, Zone 4, archts-engrs., adv. ENR 6/15/61 CD 8/13/57.

HEAVY CONSTRUCTION—LB & CA

▲ **William E. Schweitzer & Co.**, 2207 Dodge St., Evanston, Ill., CA **$6,389,000**, No. 80.75-60-40A, SOUTHWEST INCINERATOR PLANT, 1400 Pershing Rd., CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 4/25/61. CD 4/27/61, under LB.

▲† **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Iowa and **Great Lakes Dredge & Dock Co.**, 1630 Williamson Bldg., Cleveland, O., CA **$4,498,135**, DREDGING Great Lakes connecting Channel Upper Lake St., Clair and South East Bend Cut-Off, Detroit River, CIVENG-20-064-61-63, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich. BA 5/19. CD 5/26/61, under LB.

▲ **Northland Center Co.**, 2 Northland Center, Southfield, Mich., and **H. L. Vokes Co.**, 1000 Wayside Rd., Cleveland 10, O., Owners Build, **$8,000,000**, two towers, 12 story each concrete, steel and curtain walls OFFICE, adjacent to existing North Land Center; **$2,500,000**, 7 story, steel, concrete MEDICAL BLDG., SOUTHFIELD, MICH.

▲ **Kligler Enterprises, Inc.**, 75 Public Square, Cleveland, O., Owner Builds, **$6,160,000**, ($1,000,000 first year, 4-5 year program) 440 HOMES, Highbridge Rd., Falcon Homes Development, VERMILION, O. Keeva Kekst, 3121 Euclid Ave., Cleveland 15, O., archt.

▲ **LeBrato Homesites, Inc.**, c/o Joseph LeBrato, 2501 Capital St., Fort Wayne, Ind., Owner Builds, **$3,000,000**, (2-3 yr. Program) 250 HOMES, on 8 acre site, S. Anthony St. extended, just south of Paulding Rd. to be known as Aragon Park, FORT WAYNE, IND.

▲† **Allis Chalmers Co.**, 1126 S. 70th St., Milwaukee, Wis., CA **$10,800,000**, design and construct 50 mw FORCES CIRCULATION, INTERNAL STEAM SEPARATION, BOILER WATER REACTOR for LaCross Boiling Meter Reactor for Atomic Energy Comn., GENOA, WIS. Dairyland Power Cooperative, 2615 E. Ave. S., LaCrosse, Wis.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲ **Tex., Dallas**—BA 6/26—City, City Hall, RAW WATER TRANSMISSION LINE from Iron Bridge Pump Station to Holding Reservoir, 81,000 lin. ft., 72 in. concrete water line. $5,000,000. Plans deposit $10. CD 1/22/60.

▲ **Tex., Fort Worth**—BA 6/27—City, L. P. Cookinham, city mgr., City Hall, constr. 2600 x 150 ft. North-South RUNWAY EXTENSION and parallel taxiway with run-up pad, c. conc. pavement; underpass for Hy. 183 (Tunnel), conc. constr., blast pad, b. conc., incl. lighting, marking, seeding, fencing, earthwork, drainage pipe, structures, Fort Worth International Airport, Amon Carter Field, $3,000,000. Plans deposit $25. CD 2/16/61.

▲† **Ark., Little Rock**—BA 7/13—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., Titan II, Phase II, CONCRETE WORK, EARTHWORK, PAVING, METAL ARCH, CABLEWAY, METAL SILO DOORS and APPURTENANCES near Little Rock Air Force Base, ENG-04-548-61-42. Over $10,000,000. Extended date. CD 5/26/61.

▲ **Tex., Beaumont**—Bids Asked—Port of Beaumont, Bd. Comrs.,
Cont. 1, 600 ft. CARGO WHARF, open storage wharf grain loading wharf; rip rap protection, $3,000,000.
Cont. 2, 3 million bu. capacity elevator, $3,000,000.
Cont. 3, site clearing, excavation, drainage, water lines, roads, $500,000.
Cont. 4, 26,000 lin. ft. std. gauge ry. tracks, turnouts, crossings, $400,000.
Cont. 5, dredging, Neches River in front of Port areas, $200,000.
Cont. 6, 85,000 sq. ft. transit shed, $1,200,000. Deleuw, Cather & Co., 150 N. Wacker Drive, Chicago, Ill., engrs. CD 10/19/60.

HEAVY CONSTRUCTION—LB & CA

▲ **Nolan Brothers**, P.O. Box 218, Wichita Falls, Tex., CA **$6,338,224**, est. $8,000,000, East Side WATER TREATMENT PLANT, Sunnyvale, incl. chemical bldg., carbon slurry bldg., filter bldg., and storage reservoir, DALLAS, TEX. City, City Hall, Dallas, Tex. BA 5/15/61. CD 5/18/61, under lb.
Door-Oliver, 6115 Berkshire, Dallas, Tex., CA **$148,648**, FLOCULATOR and CLARIFIER EQUIPMENT, at East Side Water Treatment Plant, (Dallas, Tex.). CD 5/23/61, under LB.

▲† **J. F. White Engineering Corp.**, 4390 Santa Fe Lane, Englewood, Colo., LB **$4,822,513**, est. $5,517,406, FLORIDA PROJECT, LEMON DAM and COUNTY ROAD RELOCATION, Spec. DC 5575, COLORADO, Bureau Reclamation, Dpt. Interior, Durango, Colo. BA 6/1/61. CD 4/21/61.

▲† **List & Clark Constr. Co.**, 2 W. 40th St., Kansas City 11, Mo. CA **$3,186,468**, Schedule 1, RELOCATING U. S. Hy. 64, grading Arkansas River and interchange section, Keystone Reservoir near Cleveland, OKLAHOMA. U. S. Eng., 616 S. Boston Ave., Tulsa, Okla. BA 5/16/61. CD 6/1/61, under LB.

BUILDINGS—LB & CA

▲ **Singmaster & Breyer**, c/o owner, CA approx. **$10,000,000**, TETRAETHYL and TETRAMETHYL LEAD and ETHYLENE OXIDE PRODUCTION REFINERY, BEAUMONT, TEX. Houston Chemical Corp., 2405 Grove St., Beaumont, Tex. CD 3/14/60.

▲ **Kelly-Springfield Tire Co.**, Factory Kelly Blvd., Cumberland, Md., Owner Builds, **$10,000,000**, RUBBER TIRE FACTORY-PLANT, 3 mi. S.W., TYLER, TEX.

▲ **Harmon Constr. Co.**, 4335 W. Reno, Oklahoma City, Okla., CA Approx. **$12,000,000**, 30 story, 450 sq. ft. structural concrete and rein.-con. beams SKYSCRAPER at 16th St. and Glenarm Place, DENVER, COLO. Mid-America Building Corp., c/o Security Life & Accident Co., 14th and Stout Sts., Denver, Colo. CD 6/1/61.

▲ **Rust Engineering Co.**, 930 Fort Duquesne Blvd., Pittsburgh 22, Pa., CA Est. **$7,500,000**, DESIGN and CONSTRUCT four 115 ft. high SILOS and SLURRY TANK for cement plant, for City, FOREMAN, ARK. Arkansas Cement Corp., Shannon Bldg., Little Rock, Ark., lessee. CD 4/19/61

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., San Diego**—BA 6/29—City, Rm. 161, Civic Center Bldg., Zone 1, portion INTERCEPTOR SEWER NO. 3, 96 in. rein.-con. pipe and vitr. clay pipe. $9,973,700. Plans deposit $26. CD 11/15/60.

▲ **Calif., San Diego**—BA 7/7—City, Rm. 161, Civic Center Bldg., Zone 1, portion INTERCEPTOR SEWER NO. 4, 126 in. reinforced clay pipe and vitr. clay pipe. $2,806,400. Plans deposit $25. CD 11/15/60.

▲ **Calif., San Diego**—BA 7/12—City, Rm. 161, Civic Center Bldg., Zone 1, EFFLUENT OCEAN OUTFALL for Sewerage Sys. $5,920,000. Plans deposit $25. CD 11/15/60.

HEAVY CONSTRUCTION—LB & CA

▲ **General Constr. Co.**, 3840 Iowa Ave., Seattle, Wash., LB **$4,593,000**, first section East Side INTERCEPTOR SEWER, SEATTLE, WASH. Municipality of Metropolitan Seattle, 152 Denny Way, Seattle, Wash., BA 6/1/61. CD 5/8/61.

S. S. Mullen, Inc., 220 River St., Seattle, Wash. LB **$1,330,000**, est. $1,240,000, INFLUENT and EFFLUENT LINES to Renton Treatment Plant, (Seattle Wash.)

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 6/7, ROAD,

Ball & Simpson, 685 Delaware St., Berkeley, Calif., LB **$5,547,943** (6 bidders), grading, surf. to constr. 5.7 mi. four lane freeway, US Hy. 101 between Maple Hills Rd. Bridge south of Miranda and Myers Flt., incl. five bridges, Humboldt Co. CD 5/3/61.

BUILDINGS—LB & CA

▲ **Gilbert & Dolan Contractors**, 4747 North 16th, Phoenix, Ariz., CA **$3,197,686** (6 bidders), 259,913 sq. ft. HIGH SCHOOL, 37th Ave. and Camelback, PHOENIX, ARIZ. Phoenix Union High Schools College System Bd., City Hall, Phoenix, Ariz. Fred Weaver & Dick Drover, 128 Camelback Rd., Phoenix, Ariz., archts.

▲ **Pacific Bridge Co.**, foot of Sherman St., Alameda, Calif., CA Est. **$15,000,000**, HOTEL, CASINO and CONVENTION HALL, Incline Village, LAKE TAHOE, NEV. Pacific Bridge Co. and Sherrill Broudy, foot of Sherman St., Alameda, Calif. Constr. summer 1961.

▲ **Hoffman Constr. Co.**, 715 S. W. Columbia St., Portland, Ore., CA **$5,000,000**, 21 story APARTMENT, PORTLAND, ORE. Ladd Investment Co., Pacific Bldg., Portland, Ore. Richard Sundeleaf, 319 S. W. Washington St., Portland, Ore., archt. CA 5/28/61.

▲ **C. L. Peck**, 816 W. 5 St., Los Angeles, Calif., LB Est. $4,000,000, 6 story, rein.-con. HOSPITAL ADDN., BURBANK, CALIF. St. Joseph's Hospital, 501 S. Buena Vista Ave., Burbank, Calif. BA 5/22. CD 5/21/61.

▲ **Dinwiddie Constr. Co.**, Crocker Bldg., San Francisco, Calif., CA **$8,800,000**, 22 story BANK and OFFICE, Wilshire Blvd. and Western Ave., LOS ANGELES, CALIF. Getty Realty Co., 4201 Wilshire Blvd., Los Angeles, Calif. Claud Beelman & Assocs., 7421 Beverly Blvd., Los Angeles, Calif., archts. Brandon & Johnson, 2430 W. 3 St., Los Angeles, Calif., engrs. BA 5/25. CD 4/21/60.

▲ **Robert E. McKee**, 4701 San Fernando Rd., Los Angeles, Calif., CA **$4,512,000**, (7 bidders), 5 story ACUTE DISEASES UNIT ADDN. Orange County Hospital, SANTA ANA, CALIF. Bd. Supervs. Orange Co., Court House, Santa Ana, Calif. BA 6/1. CD 5/8/61.

CANADA

HEAVY CONSTRUCTION—BA

BUILDINGS—BA

▲ **Alta., Edmonton**—BA 6/30—Edmonton on Exhibition Assn., Exhibition Grounds, 240 x 425 ft., steel, concrete SPORTS EXHIBITION BLDG., Exhibition Grounds, $2,000,000. Plans deposit $50. K. C. Stanley & Co., 12306 Jasper Ave., archts. CD 9/3/58.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B.C. Govt., Parliament Bldgs., Victoria, Bids Opened 6/1, ROAD,

Ben Ginter Constr. Co., Ltd., 1633 1st Ave., Prince George, B.C., LB **$2,078,130**, (3 bidders), constr. 31.87 mi. Cassiar-Stewart Hy., Strohn Creek-Bell Irving River Section. CD 5/24/61.

▲ **Forbes & Sloat Ltd.**, 654 Union St., Fredericton, N.B. LB **$1,500,000**, (8 bidders), 2-bay CANTILEVER HANGAR EXTENSION, Royal Canadian Air Force Station, SUMMERSIDE P.E.I. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. BA 6/1/61. CD 5/19/61.

BUILDINGS—LB & CA

▲ **Henry J. Kaiser Co. (Canada) Ltd.**, 4920 Western St., Montreal, Que., CA design and construct, BENEFICIATING PLANT, WABASH LAKE, LABRADOR, Wabash Iron Co. Ltd., 1010 St. Catherine St. W., Montreal, Que. (Youngstown Sheet & Tube Co., 7655 Market St., Youngstown, O., U.S.A. Inland Steel Co., 30 W. Monroe St., Chicago 3, Ill. U.S.A. Inter-Lake Iron Corp., 1910 Union Commerce Bldg., Cleveland, O., U.S.A., Pickands Mather Co., Union Commerce Bldg., Cleveland, O., U.S.A. and Steel Co. of Canada Ltd., Canada). CD 2/28/6.

▲ **Richard and B. A. Ryan Ltd.**, 1705 William St., Montreal, Que. CA Est. **$3,500,000**, 1,200 men LIVING QUARTERS, townsite constr., near mining development, WABUSH LAKE, LABRADOR. Wabush Iron Co. Ltd., 1010 St. Catherine St. W., Montreal, Que. (Youngstown Sheet & Tube Co., 7655 Market St., Youngstown, O., U.S.A., Indland Steel Co., 30 W. Monroe St., Chicago 3, Ill. U.S.A. Inter-Lake Iron Corp., 1910 Union Commerce Bldg., Cleveland, O., U.S.A., Picklands Mather Co., Union Commerce Bldg., Cleveland, O., U.S.A. and Steel Co. of Canada Ltd., Canada). CD 2/8/61, under Industrial Buildings.

▲ **Richard and B. A. Ryan Ltd.**, 1705 William St. and J. G. FITZPATRICK LTD., 5151 Western Ave., both of Montreal, Que., CA Est. **$4,000,000**, 16 story, masonry air conditioned BANK and OFFICE, St. James and McGill Sts., MONTREAL, QUE. Imperial Bank of Canada, 610 St. James St. W., Montreal, Que. BA 5/17/61. CD 5/15/61.

▲ **Allan Constr. Ltd.**, 595 Ste. Angele St., Three Rivers, Que., LB **$4,365,000**, HOSPITAL for Sisters of Charity, SASKATOON, SASK. St. Paul's Hospital Bd. Governors, Saskatoon, Sask. BA 6/1/61. CD 6/1/61.

PUERTO RICO

BUILDINGS—BA

▲ **Puerto Rico, San Juan**—BA 6/27—Sears, Roebuck & Co., c/o Weed-Johnson Assocs., archts., 550 Brickell Ave., Miami, Fla., U.S.A. (selected list bidders), 2 story, bsmnt. 182 x 286 ft., 1 story, 75 x 190 ft. and 1 story, 288 x 312 ft. RETAIL STORE and WAREHOUSE. $2,000,000. J. S. Reeden, 925 S. Homan Ave., Chicago, Ill., U.S.A., consult. archt. H. J. Ross & Assocs., 1735 Biscayne Blvd., Miami, Fla., U.S.A., engrs. CD 3/21/61.

BUILDINGS—LB & CA

▲ **Heftler Constr. Co.**, c/o Miramar Charterhouse, San Juan, Puerto Rico CA Est. **$16,000,000**, 2,700 rein.-con. Bayamon Hills HOME DEVELOPMENT, BAYAMON, PUERTO RICO. Heftler International, c/o Miramar Charterhouse, San Juan, Puerto Rico. Gonzalez, Banco Popular Bldg., pda. 22, San Juan, Puerto Rico, archts. Basora & Rodriguez, 1510 Ponce de Leon Ave., San Juan, Puerto Rico, engrs.

▲ **Heftler Constr. Co., Inc.**, c/o Miramar Charterhouse, San Juan, Puerto Rico CA Est. **$15,000,000**, First Section, 2,500 unit rein.-con. Greenville Center HOME DEVELOPMENT, CAROLINA, PUERTO RICO. Heftler International, c/o Miramar Charterhouse, San Juan, Puerto Rico. Gonzalez & Gonzalez, Banco Popular Bldg., pda 22, San Juan, Puerto Rico, archts.-engrs.

AMERICANS ABROAD

BUILDINGS—BA

▲† **Antartica**—BA 7/6—U.S. Atomic Energy Comn., New York Operations Office, 376 Hudson St., New York 14, N. Y., Att. secy. PL-3 Selection Board, design construct, test 2nd PORTABLE NUCLEAR POWER PLANT for Byrd Station, McMurdo Sound.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **ARGENTINA**—National Hy., Dpt. of Argentine Republic, Avenida Maipu, Buenos Aires, ROAD,

Sicyc Impresit Empresas Asociadas, LaValle, 534, Buenos Aires, Argentina, CA **$10,374,940** constr. ROUTE 22.

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PROPOSED PROJECTS

WATER SUPPLY

▲ **Ariz., Phoenix**—City, City Hall, voted **$33,000,000**, bonds May 23, WATERWORKS EXTENSION. CD 4/24/61.

▲ **Wyo., Cheyenne**—City, City Hall, voted **$11,000,000** bonds May 23, constr. 42 in. WATER PIPE LINE, from Douglas Creek to Cheyenne. J. T. Banner & Assocs., Laramie, consult. engrs. I. H. Baldwin Jr., c/o owner, engr. CD 5/17/61.

SEWERS, WASTE DISPOSAL

▲ **Ariz., Phoenix**—City, City Hall, voted **$33,000,000**, bonds May 23, SANITARY and STORM SEWERS. CD 4/24/61.

AIRPORTS

▲ **Ariz., Phoenix**—City, City Hall, voted **$14,200,000**, bonds May 23, Sky Harbor AIRPORT EXPANSION. CD 4/24/61.

▲ **Alta., Edmonton**—Dpt. Transport, Hunter Bldg., Ottawa, Ont., plans by Rensaa & Minsos, 9130 Jasper Ave., AIR TERMINAL, Edmonton International Airport, **$10,000,000.** Bids soon. CD 1/19/59.

UNCLASSIFIED

▲ **Ariz., Phoenix**—City, City Hall, voted **$6,100,000**, bonds May 23, PARKS and PLAYGROUNDS. CD 4/24/61.

PUBLIC BUILDINGS

▲ **Ariz., Phoenix**—Maricopa Co., County Bldg., voted **$11,042,000** bonds May 23, SUPERIOR COURT, JAIL and ADMINISTRATION BLDGS. CD 7/29/59.

▲ **Ariz., Phoenix**—Maricopa Co., County Bldg., voted **$10,572,000** bonds May 23, COUNTY HOSPITAL.

▲ **Ill., Des Plaines**—School Dist. No. 207,1755 Wolf Rd., bond election Nov. 18, 3 story Maine Twp. SOUTH HIGH SCHOOL, SWIMMING POOL, Talcott Rd. and Devon Ave. **$8,800,000.** MacCaughey, Erickson, Christian & Stillwaugh, Inc., 35t Prospect Ave., Park Ridge, Ill. and Caudill, Rowlett & Scott Assocs., 3535 Edlow St., Houston, Tex., archts.

▲ **Ill., Joliet**—Joliet Twp. High School Dist., 201 E. Jefferson St., defeated bonds May 27, two HIGH SCHOOLS East side and West side. **$6,800,000.** CD 5/12/61.

▲ **Ill., Wheaton**—Bd. Comrs. DuPage Co., Courthouse, plans by Jensen & Halstead, 228 N. LaSalle St., Chicago, Zone 1, DuPage Co. CONVALESCENT HOMES, **$5,000,000.** CD 11/28/61.

▲ **O., Grafton**—State Dpt. P. Wks., State Depts. Bldg., Columbus, Zone 15, plans by Bellman, Gillett & Richards, 1620 Madison Ave., Toledo, MEDIUM SECURITY PRISON, **$12,000,000.**

COMMERCIAL BUILDINGS

▲ **Colo., Denver**—Mid-American Bldg. Corp., c/o Security Life & Accident Co., 14th and Stout Sts., plans by Sorey, Hill & Sorey, archts.-engrs., 809 NW 36th St., Oklahoma City, Okla., 450,000 sq. ft. structural concrete and rein.-con. 30 story OFFICE, to be known as Security Life Bldg., 16th St. and Glenarm Place. **$12,000,000.**

▲ **Conn., South Windsor**—Jean E. Shepard, Etls., 200 Sylvan Ave., 480 units Garden APARTMENTS, Main St. **$6,000,000.**

▲ **Fla., Orlando**—Bay Hill, Inc., c/o Fiske-Gay Assocs., engrs., 3228 Edgewater Dr., 450 RESIDENCES, Bay Hills subdivision. **$4,500,000.**

▲ **Va., Alexandria**—DISC, Inc., 1801 K St. N.W., Wash., D. C., plans by Victor R. Spector & Assocs., 207 West Broad St., Falls Church, Galaxy Resort HOTEL and CONVENTION CENTER, off George Washington Memorial Parkway, one mile south Washington National Airport. **$20,000,000.**

▲ **Wis., South Milwaukee**—Owner, c/o Zarse & Assocs., Inc., archt., 2700 S. Chicago Ave., SHOPPING MALL. **$6,000,000-$7,000,000.**

▲ **Que., Montreal**—Hopital St. Henri, Inc., c/o Jean-Paul Jolicoeur, archt., 520 Mentana St., 8 story, HOSPITAL, St. Henry Dist. **$6,000,000.**

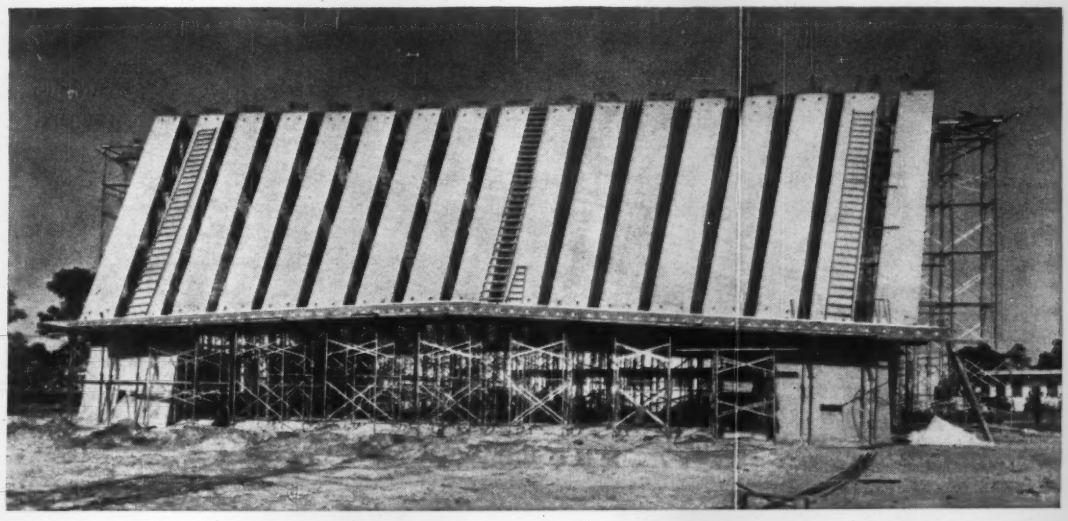
INDUSTRIAL BUILDINGS

▲ **Tex., Bishop**—Celanese Corp. Co. of America, Prudential Bldg., Houston, 20 million lbs. year POLYALDEHYDES PRODUCT PLANT. **$10,000,000.** Bids late 1962. CD 2/8/57.

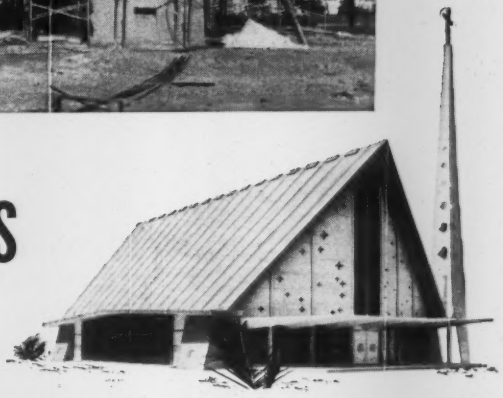
▲ **Tex., Freeport**—Nalco Chemical Co., 1020 Holcombe Blvd., Houston, TETRAETHYL and TETRAMETHYL MFG. PLANT. **$9,000,000.** Fluor Corp. Ltd., Houston Club Bldg., Houston, consult. engrs. CD 5/19/61.

▲ **Tex., Houston**—Reichold Chemicals, Inc., 1503 Haden Rd., Houston, 50,000,000 lb. annual capacity VINYL ACETATE PLANT, **$10,500,000;** ACETYLENE PLANT, $5,000,000. CD 10/15/58.

Double tee beams are 45′ long, 4′ wide, 15″ deep, and weigh 5 tons. The side beams, which support the double tees, are 95′ long, 9′ wide, 12″ thick, have a 2′ rise at the center, and an exposed aggregate finish.



PRESTRESSED DOUBLE TEES for unique roof structure...



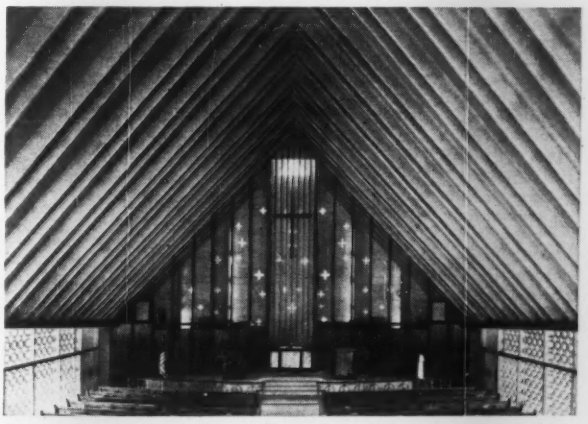
Non-load-bearing precast columns support 3′ x 8′ terrazzo facade panels. Bell tower is 85′ high, 6′ wide at the base, and was precast in 9 sections with Lehigh Early Strength Cement. Abutment structures are 10′4″ x 5′ with 12″ walls, and have an exposed aggregate finish.

• The design of Melrose Park Community Methodist Church, Ft. Lauderdale, Fla., called for a new and imaginative use of standard prestressed concrete double tees. Capped with concrete at the top and secured at the bottom on two huge cast-in-place beams, the 34 double tees make up the "backbone" of the roof structure. The 24″ open spaces between the double tees were filled with a pneumatically placed mortar. The end result is, in effect, a single, giant folded plate supported only by the corner abutments.

In the manufacture of the double tees, R. H. Wright, Inc. used Lehigh Early Strength Cement. Consistent use of this type of cement in their prestressing operations helps them attain maximum production efficiency through early removal of units and quick re-use of forms.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS

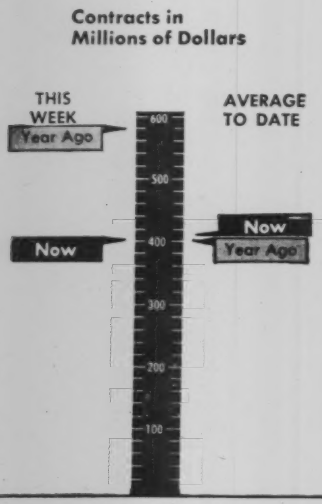


Acoustical plaster was sprayed over exposed double tees. The structure presently seats 510 with future plans calling for the addition of wings to increase seating capacity to over 1,000.

Architect: Robert E. Hansen, A.I.A.
Engineer: Walter Harry Assoc.
Contractor: Casmal Construction Co.
Manufacture and Erection Prestressed/Precast Concrete: R. H. Wright, Inc.
All of Ft. Lauderdale, Florida

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

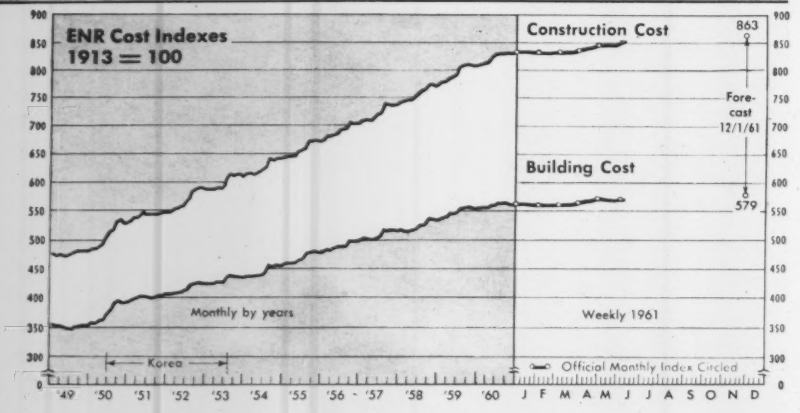
Contracts Awarded In 50 States By Type	This Week	Cum. 24 wks 1961	Chge '60-'61 %
	millions		
All Heavy Construction	$403.4	$10,003.6	+ 1
By Ownership			
PRIVATE	184.4	5,074.3	− 5
PUBLIC	219.0	4,929.3	+ 8
State & Municipal	156.6	3,743.8	+ 6
Federal	62.4	1,185.5	+14
By Type of Work			
PUBLIC			
Waterworks	4.6	173.2	−17
Sewerage	9.7	332.6	+30
Bridges*	15.6	266.9	−31
Highways	48.6	1,646.9	+13
Earthwork, Dams & Waterways	24.0	413.3	+20
Buildings:			
Excl. Housing	58.8	1,160.9	+ 8
Housing	30.3	369.1	+48
Unclassified	27.4	566.4	− 6
PRIVATE			
Buildings:			
Mass Housing	81.0	2,256.8	−15
Commercial	61.2	1,174.8	+13
Industrial	39.8	1,430.6	+18
Unclassified	2.4	212.1	−54

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of June 8	Cum. 23 wks 1961	Chge '60-'61 %
	millions		
Corporate Securities	$ 82.1	$1,606.4	+19
State and Municipal:			
All Except Housing	208.1	2,951.4	+ 2
Housing	0	31.3	+130
Federal Loans	2.5	102.3	+43
Federal Aid	0	0	−100
Total Nonfederal	$292.7	$4,691.5	−33
Federal Appropriations:			
Projects in U. S.	0	1.0	−99
Outside U. S.	0	0	−100
Total New Capital	$292.7	$4,692.5	−35



ENR INDEXES (1913 = 100), 20-cities' average	Week of June 8 1961	% Change from May 11 1961	% Change from June 9 1960
Construction Cost	851.55	+0.3	+3.1
Building Cost	570.28	+0.2	+1.9

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

ENR COST INDEXES IN 22 CITIES, 1913 = 100

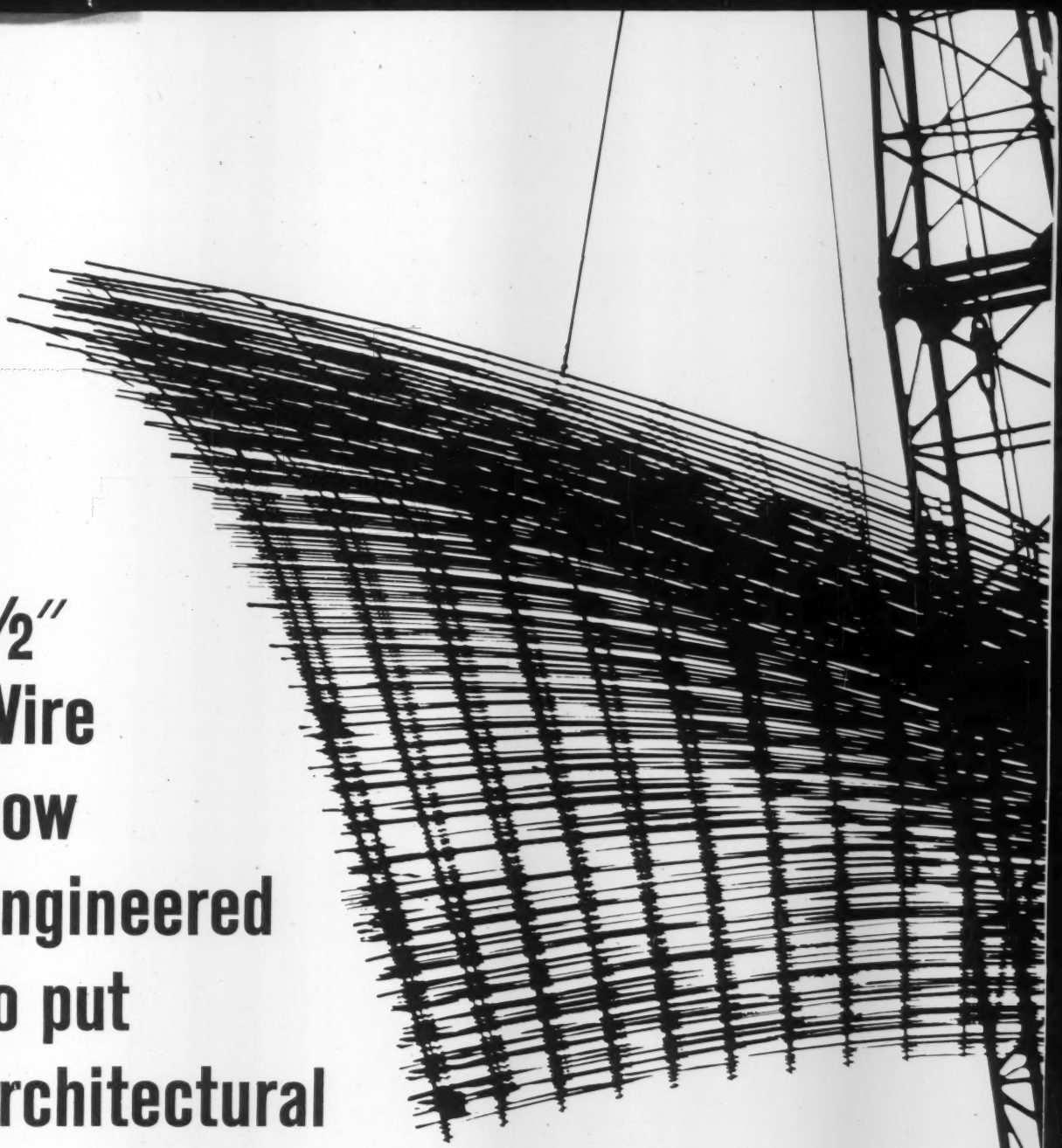
City	Construction Cost June 1961	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost June 1961	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	658.22	0	+3.9	511.77	0	+2.8
Baltimore	755.91	−0.4	+0.03	562.50	−0.07	+1.0
Birmingham	679.81	0	+4.0	532.82	0	+2.9
Boston	866.87	0	+3.6	588.37	+0.8	+5.0
Chicago	948.37	+4.2	+3.2	596.08	+1.8	+1.9
Cincinnati	845.06	−0.2	−0.04	552.00	−0.09	+1.0
Cleveland	976.12	+3.1	+3.4	573.53	+1.6	+2.1
Dallas	640.32	0	+1.8	530.30	0	+2.1
Denver	779.05	−0.3	+3.5	553.52	−0.4	+1.6
Detroit	984.14	0	+2.1	614.41	+0.4	+1.6
Kansas City	837.88	0	+3.3	561.98	0	+0.03
Los Angeles	942.03	−0.2	+8.2	569.94	−0.4	+0.6
Minneapolis	912.84	0	+2.5	586.65	0	+2.4
New Orleans	661.45	+0.5	+1.8	513.44	−0.7	−0.7
New York	1,058.97	−0.1	+5.0	668.26	+0.6	+3.4
Philadelphia	848.31	+0.9	+2.2	594.86	+0.3	+2.1
Pittsburgh	885.14	0	+1.7	625.80	0	+1.8
St. Louis	919.78	+0.1	+2.2	584.98	−0.2	+0.3
San Francisco	921.34	+0.5	+4.1	565.96	−0.2	+2.2
Seattle	887.25	0	+3.5	515.35	0	+2.3
U. S.—20 Cities' avg.	**850.38**	**+0.4**	**+2.9**	**570.17**	**+0.2**	**+1.6**
Montreal	642.49	−1.0	−1.2	458.19	−0.4	−1.7
Toronto	691.17	−0.7	−0.9	493.30	−1.0	−0.8

CONTRACTS AWARDED

	1961 May (millions)	1961 5-Mos. (millions)	Percent Change from 1960 May	Percent Change from 1960 5-Mos.
Total U. S. (ENR reported)	$1,789	$8,538	− 1	+ 4
Private	1,002	4,365	+11	+ 2
Public	787	4,173	−13	+ 6
State and Municipal	607	3,206	−14	+ 6
Federal	180	967	− 8	+ 6
ENR Volume Index, 1913 = 100	609	548	−0.2	+ 3

NEW CONSTRUCTION CAPITAL

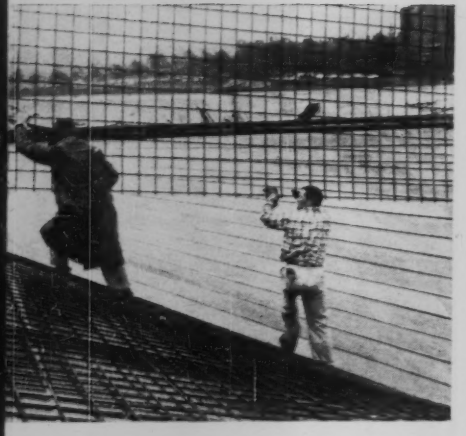
Total U. S.	1,228	4,229	−65	−37
State and Municipal Bond Sales	563	2,635	+13	− 3
Corporate Security Sales	640	1,498	+300	+36
Federal Loans, Aid (nonfederal work)	25	95	−99	−97
Federal Appropriations, (federal work)	0	1	−100	−99



½″ Wire now engineered to put architectural design miles ahead...

turn page for story . . .

Now . . . extra-heavy ½″ USS American for design versatility and lower

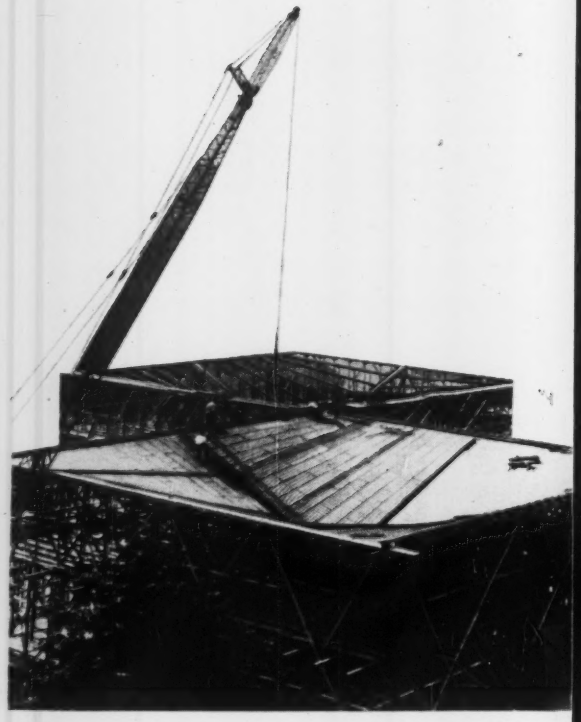


IN THIN-SHELL HYPERBOLIC PARABOLOID ROOF, SAVES 6 DAYS' CONSTRUCTION TIME.

The thin-shell roof of the new library at Hunter College consists of six 60-ft. square inverted concrete umbrellas. They are joined at the edges to form a roof 120 ft. wide by 180 ft. long. Each umbrella is divided into four hyperbolic-paraboloidal quadrants.

Steel reinforcement for the "inside-out" umbrellas was provided by USS American Structural Welded Wire Fabric. Each umbrella used twelve 31′ x 10½′ Welded Wire Fabric mats.

Installation was easily and speedily made by a small crew. When the concrete work was completed it was found that the use of pre-fabricated steel fabric had actually saved labor and material . . . and construction time had been cut by six days!



Structural Welded Wire Fabric cost concrete reinforcement

IN THIN FLAT-PLATE FLOOR SLABS, SAVES 15 WORKING DAYS

This handsome 12-story apartment building at 209-223 East 53rd Street in New York City was the first to be constructed with heavy welded wire fabric for reinforcement of thin flat-plate concrete floor slabs. Flat slab floor framing was selected because: (1) the thin (5½ ″) flat-plate slab with its smooth surfaces unbroken by offsets for beams and girders, offers more ceiling height, and (2) it permits flexibility of partitioning and trims plastering and decorating costs.

Structural Welded Wire Fabric was selected to reinforce the slabs because the machine prefabrication of high yield strength steel wires offered: (1) Reduction in time and cost of handling 10′ x 20′ prefabricated wire fabric mats as opposed to placing and tying individual reinforcing members—a savings of 1½ days to 2 days per 140′ x 60′ floors . . . and with fewer lathers. (2) Assurance that steel will be placed where required. (3) Positive mechanical anchorage in the concrete to assure crack control. **USS American Structural Welded Wire Fabric is prefabricated with greater accuracy than can normally be relied upon in field work. This assures correct placement and distribution of the steel. The wires are drawn to the very close tolerance of plus or minus 0.003″.**

The new high tensile strength (75,000 psi minimum) and high yield strength (60,000 psi minimum) of USS American Structural Welded Wire Fabric permitted a higher working stress for fabric than would have been allowed by the building laws of the City of New York for hot-rolled bars.

See next page . . .

USS **American Steel and Wire Division of United States Steel**

Here's why job-tailored USS American Structural Welded Wire Fabric is your best concrete reinforcement

You can now get USS American Structural Welded Wire Fabric with ½" diameter wires spaced as close as 2" on centers in both directions! These new areas of steel, plus the many time-tested advantages of Welded Wire Fabric, make it the best structural reinforcement for all types of construction.

1. USS American Structural Welded Wire Fabric is made from **cold-drawn** high tensile steel wire. This wire is carefully produced to conform to the requirements of ASTM Specifications A82-58T. The minimum tensile strength is 75,000 psi and the minimum yield, as defined in the specifications, is 80% of the tensile or 60,000 psi. Actually, the cold drawn steel wire has no yield point in the conventional sense of plastic stretch at a constant load. Yield occurs gradually with increasing load beyond the 60,000 psi minimum. This physical advantage of cold-drawn wire makes it **the ideal concrete reinforcement.**

2. USS American Structural Welded Wire Fabric is completely machine prefabricated by electrically welding all intersections to conform to ASTM specifications. This high-strength connection assures positive mechanical anchorage in the concrete.

3. USS American Structural Welded Wire Fabric is prefabricated with greater accuracy than can normally be relied upon in field work. The wires may not vary more than ¼" center-to-center than the specified spacings. This assures correct placement and distribution of the steel. **Wires are drawn to the very close tolerance of plus or minus 0.003".**

4. USS American Structural Welded Wire Fabric requires very little on-the-job tying. Large prefabricated sheets are shipped to the job and placed as a unit. This eliminates thousands of ties and results in important savings.

For more information on the advantages and applications of American Structural Welded Wire Fabric, get in touch with our nearest Sales Office or contact American Steel and Wire, Dept. 1180, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

USS and American are registered trademarks

American Steel and Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

Industry Shuns Water-Rich Site

A $4-million water resources project near Charleston, S. C., once billed as the key to eventual construction of a huge new industrial park, so far has failed to attract a single industrial plant. A diversion canal and a dike—basic units of the project—were completed five years ago. However, not one industry operates in the water-rich, 4,500-acre site.

The 100% vacancy rate at the site, known as Bushy Park, fired a controversy that still continues.

At the center of the argument are the City of Charleston and a contractor, Robert E. Lee of Manning. Other financially involved parties are:

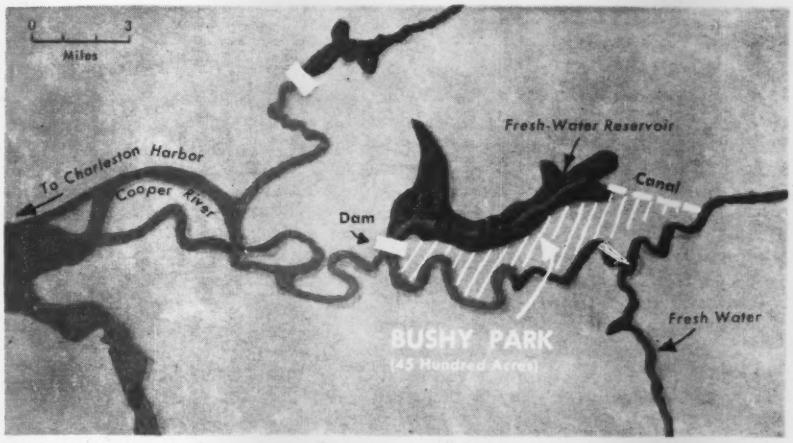
- The State of South Carolina, which provided an $850,000 loan to get the project moving.
- Charleston and Berkeley counties, co-guarantors with the city of the loan extended by the state.
- Bushy Park Authority, established to operate the industrial park.
- A Charleston bank, which loaned the authority $100,000.

Seed of the trouble was innocently planted in 1949 by the late Arthur M. Field. Serving then as Charleston's development director, this engineer recognized the site's potential and how it could be developed through provision of huge volumes of fresh water for today's thirsty industries.

On one side of the tract runs the Back River; on the other, the Cooper River with an average flow of 10 billion gal per day (map). The idea eventually evolved was ingenious: Diversion of the Cooper's waters to the Back River through a canal north of the tract; below the site where the Back River joins the Cooper, a dam to keep salt water from Charleston Harbor out of the reservoir that the dam would create. Industry then would take in water through the "back door" and discharge industrial waste out the "front door."

As it turned out, construction was easier than the method of paying for it. The state loaned the $850,000 as a starter, with the city and the two counties as guarantors. The fledgling authority issued $2.13 million in revenue bonds, which were taken by the contractor as partial payment for the construction completed. The bonds, their provisions and a contract between Mr. Lee and Charleston set the stage for the current controversy.

Under the bond terms, water would be sold to industry in the tract for $10 per million gal. The contract with the city calls for the same charge to Charleston, the heart of the argument.



DEVELOPMENT IS DONE, but 10-billion-gal daily flow goes unused.

Authority spokesmen say industry won't locate in the tract because the water charge is too high and that Mr. Lee is unwilling to cut it. Mr. Lee denies this. A sole owner of the bonds, he has the privilege of reducing the rate, and is willing to do so. "I have agreed to a rate as low as $3.50 per million gal so as to bring in industry," he says. Mr. Lee concedes, however, that Charleston wants a reduction in the rate it would pay. He opposes such a cut, even though a clause in the contract with Charleston specifies that the city will pay $2 per million gal less than any industry in Bushy Park.

CONTRACTOR Lee stands firm.

Mr. Lee criticizes Charleston for not using water from the site after advancing $1 million to the authority for construction and spending $2 million to construct a water tunnel from the site to the city 17 miles away.

He says that if Charleston used Bushy Park water, the authority would have income toward debt reduction. Charleston officials argue, however, present supplies are adequate; that the tunnel was constructed in anticipation of larger future demands.

Meanwhile, the state is pressing the authority for $96,000 in interest arrears on the loan and the bank also wants its interest and amortization payments. But since industry has not bought land in the tract, the authority has no funds to cover its debt service.

Mr. Lee is in a similar position. With no industry in the tract, he receives no interest on the revenue bonds.

This is no way to make money, so Mr. Lee has offered to sell his $2.13 million worth of bonds to South Carolina for $500,000 plus title to 350 acres of Bushy Park land.

Mr. Lee says all but Charleston seem agreeable to the terms. He adds: "But when we go to the state capital, the 350 acres seems to be forgotten. Now my offer has expired, but even so if they still want to negotiate, I'll be glad to listen."

Meanwhile, the industrial tract remains barren.

The newest reason to make your next tandem a FORD:

'61 FORD HEAVY DUTIES

GIVE TWICE THE CAB, FENDER AND RADIATOR LIFE!

Rugged Ford Heavy Duties utilize heavier gauge steel, sturdier reinforcements, and a new independent mounting system to separate cab, fenders and radiator. This stronger construction, with each component *individually* frame-supported, doubles cab, fender and radiator life—cuts downtime delays and maintenance expense.

CAB—A 25% heavier floor pan and toeboard provide a solid base for greater cab durability. New full-length door pillar reinforcements and stronger inner door panels minimize door sag. New triangular mounts keep cab level and protect it from frame-movement stresses.

FENDERS—Ford fenders are 25% heavier gauge, too. They are bolted to a rubber-cushioned transverse support in front for needed flexibility. Fender-wide rear brackets provide necessary rigidity. The removal of only 9 bolts permits pulling the fender assembly for easier access to engine.

RADIATOR—New Ford "lock-seam" construction doubles the solder area on key seams, and heavier gauge tank and header walls provide increased radiator strength. "Horse collar" mounting on rubber pads soaks up vibrations and diagonal braces at sides give solid support.

Ford's separate mounting of cab, fenders and radiator frees them from frame-movement stresses that occur when these parts are rigidly attached to each other. Result: failures and service costs are reduced even in tough off-road operation.

Ford T-Series tandem rear axle trucks and tractors are available with GVW's up to 51,000 lb.—GCW's up to 75,000 lb. Your choice of Timken or Eaton axles with up to 38,000 lb. tandem capacity. Seven exclusive-truck V-8 engines range from 302 to 534 cubic inch displacement.

SEVEN MORE REASONS WHY IT'S GOOD BUSINESS TO DO BUSINESS WITH FORD!

You save from the start with Ford's traditionally low prices, and your savings continue with low operating and maintenance costs. These facts are documented by certified test reports from America's foremost independent automotive research firm. Ask to see these reports. They're on file at your Ford Dealer's.

In addition to these dollar-and-cents savings, the following bonus benefits are yours with Ford Trucks:

1. **Rigid quality controls** give you the strongest safeguard of truck reliability ever. Modern, *exclusive-truck* manufacturing facilities, with emphasis on quality every step of the way, are designed to give you a Ford Truck that is as free from defects as a truck can be. Tangible results of these high standards are Ford's new warranties.

2. **Exclusive 100,000-mile warranty** (or 24 months) on 401-, 477- and 534-cu. in. Super Duty V-8's is the most liberal in the industry. Each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship for 100,000 miles or 24 months, whichever comes first. The warranty covers full cost of replacement parts . . . full labor costs for first year or 50,000 miles, sliding percentage scale thereafter.

3. **12,000-mile warranty** (or 12 months) on all 1961 Ford Trucks of every size is further evidence of the confidence Ford has in its quality controls. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. The warranty does not apply, of course, to normal maintenance service or to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points.

4. **Special fleet financing** can be arranged by your Ford Dealer. It's available for owners of two or more trucks, and provides the opportunity to precisely tailor payments to your income patterns or depreciation schedules. This fleet-fitted financing offers substantial savings and frees your working capital.

5. **Sales engineers and service specialists** in 36 district offices are on call to solve special truck problems. Working with both dealers and customers, these experienced truck men represent another extra step Ford takes to provide your continued satisfaction.

6. **Replacement parts depots** at 26 strategic locations across the country quickly supply needed parts from ample stocks. Ford's entire supply system is geared to give you faster service and reduce costly downtime . . . *wherever* you are.

7. **6,800 Ford Dealers,** including 280 specialized Heavy Duty truck dealers, can keep your trucks ready to go wherever they go. From coast to coast, fast Ford service—gas *and* Diesel—is always close at hand.

From Super Economy pickups to Diesel-powered tractors, you can now fill every truck need up to 76,800 pounds GCW with a modern, money-saving Ford Truck.

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Industry's Spending Plans for '61

(Seasonally adjusted annual rate in billions)

Industry	1960 Actual	1961 Planned	% Change '60-'61	1961 by Quarters Jan-March	Apr-June	Jul-Sept
ALL INDUSTRY	35.68	34.46	− 3	33.85	33.85	34.60
Manufacturing	14.48	14.00	− 3	13.75	13.65	14.05
Durable goods	7.18	6.45	−10	6.50	6.30	6.40
Nondurable goods	7.30	7.55	+ 3	7.25	7.35	7.70
Nonmanufacturing	21.20	20.46	− 3	20.10	20.20	20.55
Public utilities	5.68	5.91	+ 4	5.35	5.75	6.15
Commercial (1)	11.57	11.05	− 4	11.30	10.90	10.80
Mining	0.99	1.03	+ 4	0.95	1.00	1.05
Railroads	1.03	0.70	−32	0.70	0.75	0.65
Transportation excl RR	1.94	1.76	− 9	1.75	1.85	1.85

Based on businessmen's reports in late April and May '61. Data excludes outlays of farm businesses and outlays charged to current account
(1) Includes trade, service, finance, construction and communication.
Source: Dept. of Commerce and SEC

Capital Spending Upturn Looms

The upturn in capital spending will appear quickly—in the upcoming third quarter. Nearly all major industries expect a rise in investment from the first-half average.

Businessmen's plans as of late April and May would halt the outlays down-trend for new plants and equipment in the current quarter, with a climb scheduled in the July-September quarter.

The annual rate of capital spending is expected to level off at $33.85 billion in this quarter, according to the U.S. Department of Commerce and the Securities & Exchange Commission.

In the July-September quarter, a 2% rise is expected on a seasonally adjusted annual rate basis.

This means that the 1960-61 decline in capital spending was relatively mild and of short duration. The slide lasted through only three quarters. It hit the low in this year's first quarter, but still was only 7% under the recent high set in the second quarter of 1960.

The downturn is even milder when considered on an annual total basis. Plans for 1961 place spending at $34.46 billion, only 3% under last year. Although the total projected for 1961 would be 7% below 1957's record high, the rate of spending in the fourth quarter of this year probably will be much closer to the 1957 average.

This is indicated by the McGraw-Hill Economic Department's own survey of businessmen's capital spending plans (ENR Apr. 27, p. 21). It shows that commerce and industry plans capital outlays only 1% below those of 1960. And this would be a smaller decline than the 3% slide indicated in the McGraw-Hill survey taken in November 1960.

If the full year is to end only 1% below last year's volume, capital spending will really have to move in the next six months. Construction will contribute its share in full measure. Industrial building contracts awarded so far this year are up 26% from 1960, while commercial buildings contracts are up 16%, setting a new record pace, according to ENR figures.

Fate of Cowlitz Hydro Job In Hands of Court Again

Future of the trouble-dogged Cowlitz River power development project in Washington State rests again in the hands of a court. Tacoma City Light asked Pierce County Superior Court for a declaratory judgment on the legality of a voter-passed measure barring construction of power dams on the Cowlitz.

The city wants a decision before it sells an $84-million bond issue, which will finance construction of a dam at Mossyrock. Officials contend the initiative is either unconstitutional or inapplicable to the two-dam project.

The Cowlitz project has been plagued by legal actions ever since 1955. Pending in the court is a request by Perini Corp. of Framingham, Mass. that a new completion date be set (ENR Apr. 20, p. 95). The contractor argues the July 1962 completion date is no longer realistic because of changed conditions resulting from floods, slides and fire (ENR Dec. 22, 1960, p. 44).

The Washington State Sportsmen's Council, sponsor of the initiative passed last November, may also ask the court to enjoin construction of Mayfield Dam. Completion of this unit is scheduled for middle or late 1962.

However, Tacoma will ask that the court require the association to post a $40-million bond to protect against loss resulting from delays, so the injunction move may not materialize.

Equipment Orders to Climb Later

Construction and mining machinery manufacturers forecast that their new orders will decline for the rest of this year, but pick up sharply in the first quarter of next year.

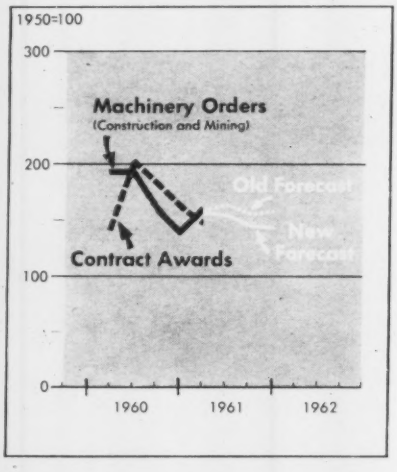
The manufacturers reporting to the McGraw-Hill Economics Department are more bearish now than in February, and gloomy compared to last November. The composite forecast of a 13% drop in 1961 orders is 5% lower than the February forecast and 12% lower than the November 1960 forecast.

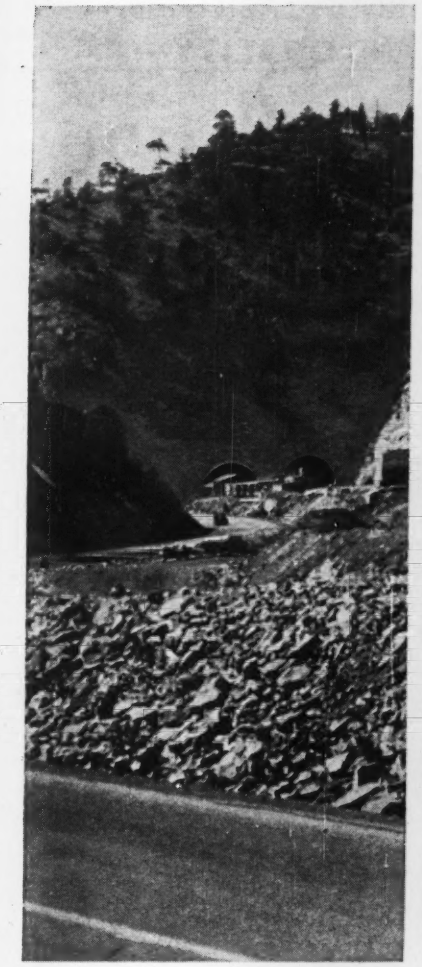
In February, manufacturers forecast that volume in the second quarter would be equal to 163 on the index, based on 1950 as 100 (ENR Feb. 23 p. 88). The May forecast puts volume for the second quarter at 155, declining through the fourth quarter to 143. The February forecast put final quarter orders at 157.

In the first quarter, however, orders are expected to rise sharply to 162.

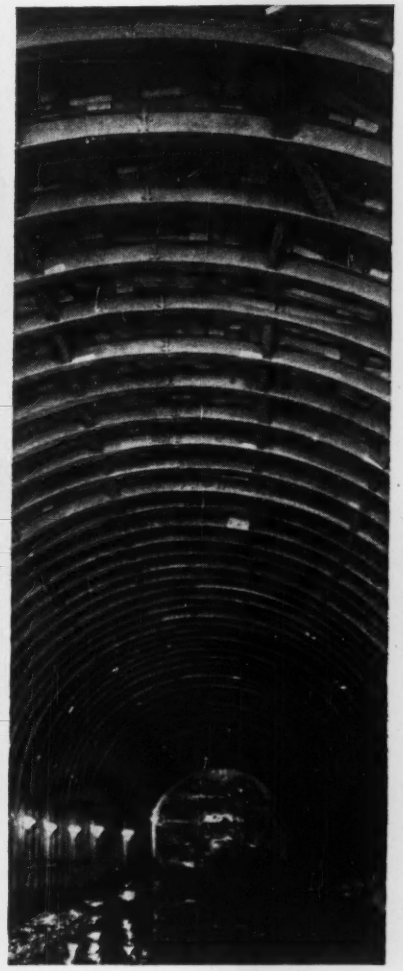
Order volume is trending down for the second consecutive year, despite an uptrend in contractors' new business as measured by ENR's Contract Awards Index.

The reporting companies represent a sample of the construction and mining equipment manufacturing industry.





RUGGED TERRAIN job-site near Idaho Springs, Colorado, where new twin tunnels will eliminate mountainous, hairpin curve highway showing in foreground. Colorado Constructors Inc., Denver, are the contractors for the $2,766,000 project.



TWIN TUNNELS are each 695 ft. long and finish to 32 ft. high and 26 ft. wide. Monolithic reinforced concrete embedding the COMMERCIAL steel supports will be poured to finish off the twin tube tunnels.

ARCH RIB CROWN JOINT shows 8" WF beams, accurately curved and free of camber, joined at butt plates with quick acting bolts. Timber spacers and steel tie rods between the ribs, plus the lagging and blocking outside the ribs, all add up to a safe installation.

How COMMERCIAL steel ribs support

Tunnels Blasted Thru Crumbly Gneiss Mica

Construction of twin tube tunnels of the Floyd Hill Project west of Denver is nearing completion. Each will handle 2 lanes of one-way vehicular traffic plus a 3 ft. pedestrian walkway. Tunnels will eliminate a mountainous, hair pin curve and upon completion this year the project becomes another link in coast-to-coast U.S. Interstate #70.

Progress was stymied by the unstable nature of the gneiss mica rock encountered in boring through Floyd Hill. This crumbly rock falls apart rapidly and therefore offered no reliable support in the crown or ceiling of the tunnels. Construction personnel and tunneling equipment were constantly endangered. Excavation by drilling and blasting compounded the problem.

Problem is solved by quickly erecting 4 piece rib sets furnished by COMMERCIAL. As soon as muck is removed after an 8 ft. round of blasting, sets are erected—arch ribs and wall posts joined with quick acting bolts. Timber spacers and steel tie rods between each steel set secure and tie together the entire structural steel support. Timber lagging and blocking between arch ribs and rock excavation prevents falling rock and increases load carrying capacity of the structural steel tunnel support.

FOR COMPLETE INFORMATION involving support for tunnels, vertical shaft, or open pits, COMMERCIAL'S engineering counsel is yours for the asking. Address: Commercial Shearing & Stamping Company, Youngstown 1, Ohio. Attention: Department E-24.

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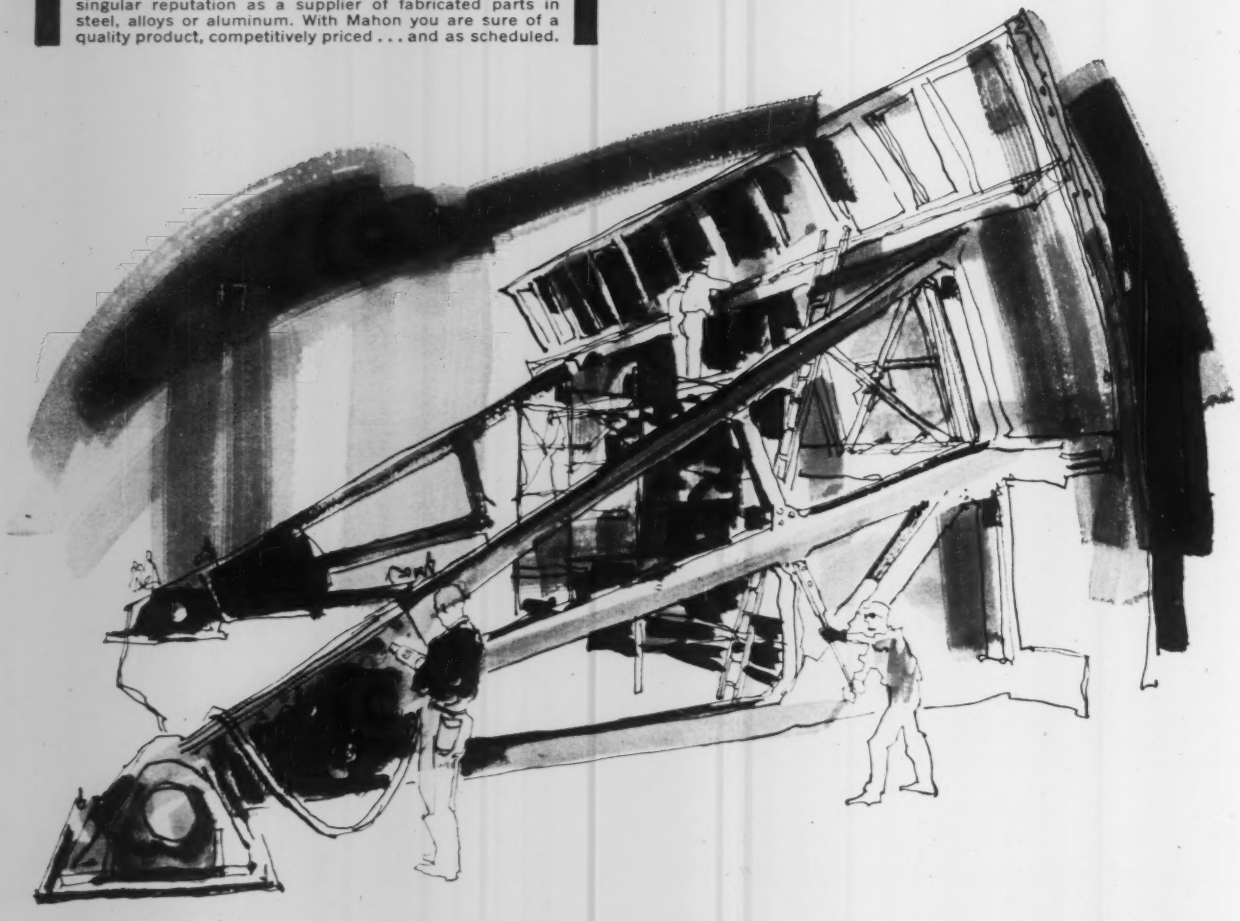

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Court Rules on 'Separate Gate'

- **Supreme Court explains circumstances under which plant unions cannot picket "contractor" gates.**
- **Outside contractors are protected only if their work is unrelated to normal operations of plant.**

The U. S. Supreme Court says it is illegal for an industrial union, in a dispute with an industrial employer, to picket a plant gate reserved for employees of independent contractors not involved in regular production or maintenance work.

The high court's opinion was handed down last month in a test case involving General Electric's Co.'s Appliance Park plant at Louisville, Ky. and the International Union of Electrical Workers. It was the first "reserved gate" case to reach the court in a series of legal court tests between craft and industrial unions over craft construction and maintenance work at industrial plants.

Actually, the three-to-one court decision, with Justice Felix Frankfurter writing for the majority, did not make a final ruling in the case. But it established the principle that a gate especially set aside for outside contractors is off-limits to an industrial union picketing against its employer.

Such picketing, Mr. Frankfurter wrote, would be an illegal secondary boycott if it halted the operations of an outside contractor whose employees are not engaged in normal plant operations.

However, in the General Electric case, the court said the case did not clearly establish whether the special Gate 3 was used solely by employees doing unrelated construction and maintenance work or whether it was used at times by other employees doing regular maintenance work. The court sent the case back to the Court of Appeals to determine how often the gate was used by workers doing conventional maintenance.

The final decision, the court said, will depend on the extent contractor employees used the gate for normal maintenance operations. If the total is negligible, said Mr. Frankfurter, the court will rule against the industrial union. If, however, the gate was used by workers doing both conventional and construction work, "such mixed use of this portion of the struck employer's premises would not bar picketing rights of striking employees."

Justice Frankfurter said that where an employer establishes a "separate gate, marked and set apart from other gates, the work done by the men who use the gate must be unrelated to the normal operations of the employer and the work must be of a kind that would not, if done when the plant were engaged in its regular operations, necessitate curtailing those operations"—under these conditions the court will uphold the National Labor Relations Board ruling against the electrical union.

The high court's leanings are of vital importance to independent contractors and industrial employers who, more and more, are utilizing the outside contract, where the contractor performs special construction and maintenance work for the manufacturer.

In the Appliance Park case, the electrical workers union, during a 1958 strike against General Electric Co., picketed the entire premises of the plant, including reserved Gate 3-A. This gate was set aside for "employees of contractors only" doing construction work on new buildings, installation and repair of ventilation and heating equipment, retooling and other services. Included in these services was "routine maintenance" work.

When the contractors' employees refused to cross the IUE picket lines, General Electric Co. filed a complaint with the National Labor Relations Board. The Board ruled that the electrical union committed an illegal secondary boycott—picketing an employer not involved in the dispute—and the Court of Appeals upheld the ruling.

In arguing against the decision, the IUE claimed that an industrial employer could break a strike by a production union simply by assigning special gates to outside employers "for deliveries, customers and replacement workers which will be immunized from picketing." Said Mr. Frankfurter, who was joined by Chief Justice Warren and Justice Black:

"This fear is baseless. The key to the problem is found in the type of work that is being performed by those who use the separate gate."

Apprentices Are Hard to Get

What is putting the skids under apprenticeship?

A study made by the Building Trades Employers Association of Westchester & Putnam Counties, New York, suggests a simple answer: The psychology of youth has changed.

Young men, the study shows, aren't what they used to be. They don't want to work with their hands. They don't want to invest in an education. They think the pay of apprentices is too low. (In Westchester, bricklayer apprentices start at $1.627, carpenter apprentices as $2.20.) They want to make all the money they can—and do it right now. And they think they are entitled to big money even though they have no training for anything.

A steady decline in applications for apprentice training prompted the study. This year, for the first time, for example, there is no carpentry class in White Plains—because not a single applicant could be found.

The BTEA is trying to find a solution to the problem. The personal opinion of one who worked on the study is that the answer must be found in an educational and promotional program that sells high school students on the opportunites in construction.

The trouble in Westchester and Putnam counties, however, is symptomatic of a national problem. New registrations of construction trades apprentices are down and drop-outs are up, according to figures compiled by the U.S. Labor Department's Bureau of Apprenticeship and Training.

During the last half of 1960, for example, the plasterers registered 188 new apprentices but lost 249 by cancellations. (Two years ago, new registrations were 299 for the same period, cancellations 169.)

Lathers are in the same boat. Carpenters are not doing much better—3,865 new registrations, 3,771 cancellations. Two years ago, the carpenters registered 5,697 apprentices in the last half of the year and lost only 3,007.

At the end of last year, the total number of construction industry apprentices still in training was 102,963. Total at the end of 1958 was 108,814.

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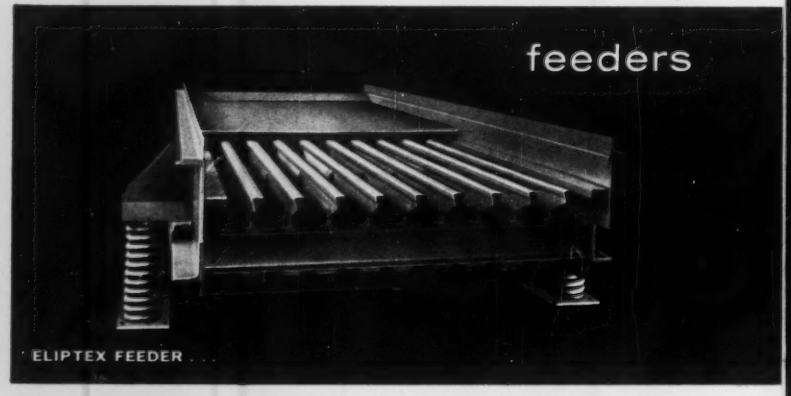

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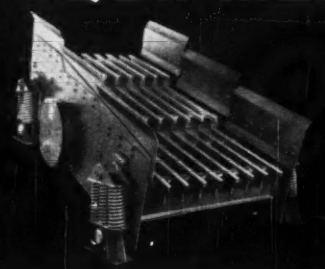
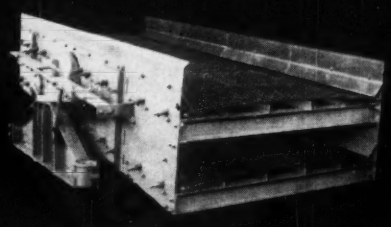


HEAVY DUTY SCALPERS . . .



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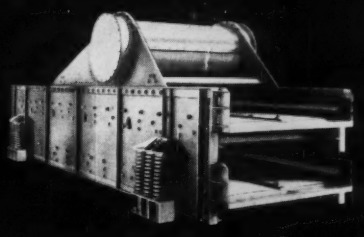

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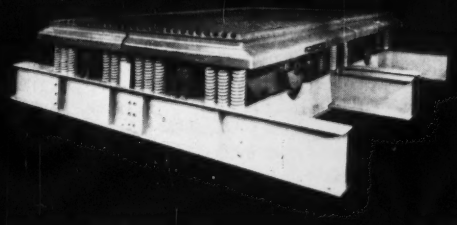

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Hearing Set on Discrimination

This week, government contractors and labor unions get a final chance to comment on the government's program to eliminate discrimination against Negroes and other minority groups on government contract work. Once this happens, the final anti-discrimination rules will go into effect.

The rules appear as proposed regulations prepared by the President's Committee on Equal Employment Opportunity. A public hearing on the regulations will be held today. The hearing will be conducted by a three-man panel composed of United Auto Workers' President Walter Reuther, attorney Abe Fortas and Silliman Evans, Jr., publisher of the NASHVILLE TENNESSEAN.

The tentative regulations detail the methods to be used in ending job bias on the part of contractors and labor unions. Among other things, all parties to a government contract, including the major contractor and subcontractors and their unions, must file an affirmative statement that they do not discriminate in their hiring and promoting policies.

Details of the compliance forms are still being worked out by the committee, and may not be ready in time for this week's meeting. However, they are likely to require only a statement of non-discrimination and not affirmative evidence that Negroes, for instance, are to be employed or represented by a particular union. Presumably, a challenge to such a statement must come in the form of a complaint to the committee.

The specific proposals drawn up by the committee lower the contract size (from $10,000 to $5,000) that must contain the non-discrimination clause. Each contractor and principal subcontractor will be required to file a compliance report. In addition, the contractor must furnish a statement from the union involved as to its membership practices, and notify the contracting agency if the union refuses to furnish such information.

While the President's committee has no authority over a labor union, as it does over a contractor through the anti-discrimination clause, it may call union officials into a public or private hearing to investigate their membership practices.

The proposed orders emphasize, in seeking compliance with the non-discrimination rules, that the committee will first seek to end job bias by "conciliatory means." In any event, the committee will not seek to terminate the federal contract (the final penalty) until the contractor has an opportunity for a hearing.

President Kennedy's Executive Order, issued last March, gives the committee power to issue "appropriate" regulations.

NLRB Forbids Missile Boycott

The National Labor Relations Board last week moved to forestall at least one type of jurisdictional dispute at missile construction sites involving craft and industrial unions and the missile-producing Martin Co.

A three-man NLRB panel found the International Brotherhood of Electrical Workers had violated the Taft-Hartley law by refusing to install cables prefabricated by a contractor for Martin Co.'s Pershing missile. The cables had been produced by Gable Electric Service Corp., whose workers are represented by the United Auto Workers Union.

In July 1960, members of IBEW Local 756, working at Orlando, Fla., where Martin Co. was producing a Pershing missile, declined to perform certain phases of construction work involving installation of the cables. The local claimed jurisdiction in the fabrication of some of the cables which had been done by members of the Auto Workers Union.

An NLRB trial examiner, subsequently supported by the Board members, found the IBEW local's action to be an illegal secondary boycott against Gable, a secondary employer, while the craft workers were directly employed by Martin Co.

Despite the IBEW's refusal to work, the missile project was completed, and the specific case was considered "moot" by the trial examiner. However, in his ruling, the examiner, Stanley Gilbert, noted that the issue was likely to arise again—that Martin was expected to continue the prefabrication of cables through Gable Electric Corp. for future missile projects.

The examiner said: "It appears likely that the union (the IBEW local) will persist in attempting to have Martin alter this policy." As a result, the NLRB ordered Local 756 to cease and desist in refusing to work on, or persuading other employees to refuse to install, the prefabricated cables in the future.

The decision underscores a complex and perennial problem.

Unions Stand Pat

Two locals freeze pay in effort to get more work

Two more building trades unions have frozen their wages for the coming year in an effort to help their respective industries. They are Local 40 of the plasterers union in Rhode Island and painters Local 103 in Binghamton, N. Y.

"We stood pat because we are losing a lot of business as it is," explained Angelo Procaccini, business agent of Local 40. "We are trying to give the plastering industry a better chance to come back in building construction. There have been too many substitutions for plaster."

Members of Local 40, working in all parts of the state except Westerly and Woonsocket, will continue to get $3.92½ cents an hour, plus 10 cents for health and welfare, until next June 1. In contrast, the Rhode Island scale of union carpenters who install plaster substitutes such as acoustical tile is $3.55.

In explaining the Binghamton painters' wage freeze, Leo F. Heavey, business agent of Triple Cities Local 103, said staying at the same wage level was necessary "to help stabilize the painting industry" and to put "legitimate" contractors in a "better competitive position." Contractors in his area, he said, are forced "to compete with many self-styled paint contractors who hire men but do not carry compensation or unemployment insurance, withhold nothing from wages and, in general, break every law in the book."

The old scale at which painters have agreed to work for another year is $3.25.

Mr. Heavey said the union could have had a 13-cent hourly wage increase without asking for it because of a master labor agreement that provides for increases based on the average increases in five other upstate cities.

Elsewhere, annual wage and fringe benefit boosts that add up to 15 cents an hour, or more, are common.

Fringe benefit improvements are running strong, with health, welfare and pensions getting most of the attention. A few unions are taking all their increases in fringes. Others are splitting their packages near the middle.

Plumbers and steamfitters in eight northeastern Indiana counties, for example, have negotiated a two-year, 30-cent pact with this distribution: 15 cents for pensions the first year and 13 cents in wages the second year, plus 2 cents for apprentice training.

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Bids: June 30, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y., Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 30th day of June 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

E. E. Towlson, Dist. Engr., 333 E. Washington St., Syracuse, N. Y.

OSWEGO COUNTY

Contract No.	Type	Name of Highway & Miles	Deposit For Plans	Bid Deposit	Dept. Est.
FIM. 61-1	Plastic Pavement Marking	Int. Rte. 505 Brewerton-Central Square FISH. 57-3 FISH. 58-9 Central Square-Parish FISH. 58-26 3.64 Miles	$5	$1,400	$25,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act. of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract, and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

FEDERATION OF MALAYA

CAMERON HIGHLANDS SCHEME

CONTRACT NO. 7

Tenders are invited for the supply and erection of 132 kV and lower voltage cables to be installed on behalf of the Central Electricity Board, Federation of Malaya.

Tenders are invited only from firms who are prepared to submit complete tenders.

A short precis of the extent of the work for which complete and comprehensive offers are invited may be had on application to Messrs. Preece, Cardew & Rider, 8, 10 & 12, Queen Anne's Gate, London, S.W.1.

Tender documents, which will be available from 28th. June, 1961 and returnable by 4th. September, 1961, may be obtained from the same address on receipt of a payment by cheque for £20 in favour of Preece, Cardew & Rider. This payment will not be refunded.

It is regretted that no extension to tendering time can be given.

The Central Electricity Board do not bind themselves to accept the lowest or any Tender, nor will they be responsible for any costs incurred by Tenderers in making their Tender.

NOTICE to ADVERTISERS

Because of the Holiday, Independence Day, the "Searchlight" pages of

ENGINEERING NEWS-RECORD

Close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy, or changes of copy, to reach us accordingly.

Display and Undisplayed Ads

FINAL CLOSING TIME

July 6th issue closes June 26th
July 13th issue closes June 30th

PROPOSALS

July 6th issue closes June 29th
July 13th issue closes July 7th

District of Columbia—Sewer Construction—Dept. of Sanitary Engineering, Office of the Potomac Interceptor, May 26, 1961. UNIT #3, THE MARYLAND TUNNEL OF THE POTOMAC INTERCEPTOR SEWER, between Anglers Inn and Great Falls, Maryland (Invitation No. C-61136-S), consisting of the following: TUNNEL CONSTRUCTION: 8,500 lin. ft. of 84" concrete sewer in tunnel, including access shafts and vent structures. OPEN CUT SEWER CONSTRUCTION: 625 lin. ft. of 84" dia. reinforced concrete sewer. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EDT, June 22, 1961, EDT, in Room 424, 499 Penn. Ave., N.W.

Bids: June 28, 1961

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. Wednesday, June 28, 1961

For Narrows Bridge Contract No. NB-6, Suspended Structure and Decks on Anchorages. Work includes the steelwork and concrete paving for a two level suspended structure at the entrance to New York Harbor.

Each bid must be accompanied by a deposit in the amount of $500,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $100.00, which will not be refunded.

CONTRACTORS WATCH THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: July 6, 1961

Contract No. 1184—Construction
Contract No. 1184E—Electrical Work
Contract No. 1184H—
Heating and Ventilating Work
Contract No. 1184P—Plumbing Work

NOTICE TO BIDDERS
ADVERTISEMENT
FOR: A SEWAGE TREATMENT PLANT AND APPURTENANT WORK FOR THE BLIND BROOK SANITARY SEWER DISTRICT, LOCATED IN THE CITY OF RYE, WESTCHESTER COUNTY, NEW YORK

Sealed bids or proposals will be received in Room 508, County Office Building, White Plains, New York, until 11:00 A.M. Eastern Daylight Time on Thursday July 6, 1961, immediately after which the bids will be opened publicly and read aloud in Room 808 of the said building.

The work under these Contracts comprises the construction of a new sewage treatment plant except the furnishing and installation of sludge disposal process equipment, and includes revisions to the existing Screening Plant, the relocation of a section of connecting sewer, and the construction of an outfall cleaning chamber at a distance from the plant site.

The site of the work is located in the City of Rye, the major portion of it on County-owned property within Disbrow Park on Oakland Beach Avenue. The site is surrounded by property of the City of Rye employed for the City's incinerator, refuse dump, public works garage and recreation field.

The overall time for completion of the work for all contracts is 450 calendar days but the new treatment plant must be completed, tested and ready for full operation within 330 calendar days.

All Contract Documents may be seen in Room 508, County Office Building, White Plains, New York. Bidders may procure plans and specifications for the work proposed upon a cash deposit of $25.00 which deposit will be refunded provided that plans and copies of specifications are returned in good condition within thirty days after the receipt of bids.

All bids must be accompanied by a certified check payable to the County of Westchester, New York, in amounts not less than the following:

Contract No. 1184—$75,000 (bid bond acceptable)
Contract No. 1184E—$9,000 (bid bond not acceptable)
Contract No. 1184H—$2,000 (bid bond not acceptable)
Contract No. 1184P—$3,000 (bid bond not acceptable)

Bids must also be accompanied by a consent of surety in the form included in the Contract Documents.

The County of Westchester reserves the right to waive any informalities in the bids or to reject any and all bids. No bidder may withdraw his bid except by written request submitted at least twenty-four hours before the time for opening or until the lapse of forty-five days after the actual opening thereof.

COUNTY OF WESTCHESTER
DEPARTMENT OF PUBLIC WORKS
BY: JAMES C. HARDING
COMMISSIONER OF PUBLIC WORKS
Dated: White Plains, New York, June 14 1961

Bids: June 29, 1961

Power Authority of the State of New York
Niagara Power Project

ADVERTISEMENT FOR PROPOSALS
FOR
PLANTING OF SPECIMEN TREES, SHRUBS AND VINES
WATERWAYS, WORK SECTION II
FROM
PINE AVE. TO N.Y.C. RAILROAD TRACKS
IN
NIAGARA FALLS
NIAGARA COUNTY, NEW YORK
SPECIFICATION NO. PA-N-23051
NIAGARA CONTRACT NO. N-42

NOTICE TO CONTRACTORS: The Power Authority of the State of New York, will receive sealed proposals for planting of specimen trees, shrubs and vines from Pine Ave. to New York Central Railroad tracks in the Waterways, Work Section II, in Niagara Falls, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 29th day of June, 1961, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:
Estimated:
297 trees Acer rubrum (Red Maple), various sizes, ball and burlap
259 trees Acer saccharum (Sugar Maple), various sizes, ball and burlap
180 trees Fraxinus Americana (White Ash), 2"-2½" caliper, ball and burlap
347 trees Picea glauca densata (Black Hills Spruce), various heights, ball and burlap
551 trees Pinus nigra (Austrian Pine), 5'-6' height, ball and burlap
460 trees Pseudotsuga taxifolia (Douglas Fir), 6'-8' height, ball and burlap
466 trees Quercus borealis (Northern Red Oak), various sizes, ball and burlap
109 shrubs Myrica Pennsylvanica (Bayberry), 3'-4' height, ball and burlap

All work shall be completed on or before December 1, 1962 except for maintenance.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the total of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: July 27, 1961

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

INVITATION FOR BIDS—NO. YS-3-13
69 KV TRANSMISSION LINE
MATERIALS

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed, written bids for furnishing and delivering the following goods, equipment, and materials, exclusive of wood poles and crossarms, either fob Contractor's shipping point or cif Bangkok Wharf, Thailand for approximately 130 kilometers (81 miles) of 69 kv transmission lines for the Transmission System, Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents:

(1) Pole line hardware suitable for H-frame, wood pole applications including machine bolts, eye bolts, nuts, locknuts, washers, anchor rods, load plates, yoke plates, reinforcing plates, guy straps, brackets, ball hooks, shackles, links, end fittings, and center clamps.
(2) Ball and socket disc type suspension insulators, EEI-NEMA class 52-3.
(3) Strain and suspension hardware including suspension clamps, strain clamps, and parallel groove clamp connectors.
(4) No. 4/0 AWG, ACSR conductor, 6/1 type construction.
(5) Overhead ground wire 7-wire 0.953 cm (⅜ inch) diameter, high strength grade, class A, galvanized steel strand.
(6) Structure ground wire, 3-wire, 0.794 cm (5/16 inch) diameter, common grade, class A, galvanized steel strand.
(7) Guy wire, 7-wire 1.1112 cm (7/16 inch) diameter Siemens-Martin grade, class A, galvanized steel strand.
(8) Conductor and overhead ground wire accessories including preformed armor rods, tubular joints, repair sleeves, hydraulic compressor and dies, and filler paste.

Invitation for Bids will be issued on or before June 9, 1961, and will be opened July 27, 1961. Copies of Contract Documents, Invitation for Bids—No. YS-3-13, 69 KV Transmission Line Materials, may be obtained by qualified Bidders on written request to:

Royal Irrigation Department
Attention: Thai Liaison Engineer
c/o Engineering Consultants, Inc.
1901 South Navajo Street
Denver 23, Colorado, U.S.A.

Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U. S. $10.00 for each copy of the Contract Documents requested. The remittance is nonreturnable.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

May 29, 1961

Bids: July 6, 1961

Port of Oswego Authority
Construction of East Side Terminal Facilities, Contract 2

ADVERTISEMENT FOR BIDS

Sealed proposals will be received by the Port of Oswego Authority in the Common Council Chambers, City Hall, Oswego, New York, until 2:00 p.m., Eastern Daylight Time, on the 6th day of July, 1961, and immediately thereafter will be opened publicly and read aloud.

The work to be done under this contract shall be completed in 540 calendar days after the date specified in the Notice to Proceed, and consists of a marginal wharf, transit shed, railroad tracks and crane rails, grading and paving, dredging, and utilities.

Bid guaranty in the amount of $50,000 and a performance bond in the sum of 100 per cent of the contract price will be required.

Contract Plans, Specifications and Proposal Forms may be obtained from the Port of Oswego Authority, West First Street, Oswego, New York, and from the Engineer, Fay, Spofford & Thorndike, 11 Beacon Street, Boston 8, Massachusetts, on or after the 7th day of June, 1961.

A deposit of $100.00 is required for a complete set of Contract Documents and Plans, which will be refunded upon return of the Plans and Specifications in good condition within 10 days after the opening of bids.

PORT OF OSWEGO AUTHORITY
By Clark Morrison III, Chairman

TRINIDAD & TOBAGO ELECTRICITY COMMISSION

PORT OF SPAIN "B" POWER STATION

CONTRACT NO. 215
P.C.R. REF. NO. 1054/1010

Tenders are invited for the supply and erection of TWO 475,000 lb/hr. Steam Generating Units and ancillary plant for the Port of Spain "B" Power Station.

CONTRACT NO. 217
P.C.R. REF. NO. 1054/1012

Tenders are invited for the supply and erection of 33 kv Main Switchgear for the Port of Spain "B" Power Station.

Tenders are invited only from firms who are prepared to submit complete tenders for each contract.

A short precis of the extent of the works for which complete and comprehensive offers are invited may be had on application to Messrs. Preece, Cardew & Rider, 8, 10 & 12 Queen Anne's Gate, London, S.W.1.

Tender documents, which will be available from 5th June 1961 and returnable by midday on 4th September 1961, may be obtained from the same address on receipt of a payment by cheque for £15. O. O. in favour of Preece, Cardew & Rider. This payment will not be refunded.

At a later date offers will be invited for Turbo-Alternators, Transformers, Auxiliary Switchgear and Cabling. Persons interested in such should NOT now apply, but await further advertisements.

The Trinidad & Tobago Electricity Commission does not bind themselves to accept the lowest of any Tender, nor will they be responsible for any costs incurred by Tenderers on making their Tender.

OFFICIAL PROPOSALS

Bids: June 22, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Canal Law, for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 22nd day of June 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. FULLER, District Engineer, 353 Broadway, Albany, New York						
Rensselaer Rte. 22	FARC 61-85	Petersburg-North Petersburg, S.H. 8059; Stone School House-North Petersburg-Vermont State Line, S.H. 1424 Proj. F-396(5)	2.35	Asphalt Concrete = 2.32 Mi. Misc. Work = 0.03 Mi.	$33,000 Plans $5	$585,000
Saratoga Warren Rte. 9	RC61-82 C61-13	South Glens Falls Village: Saratoga Avenue and Main Street, S.H. 5598; City of Glens Falls: Glen Street Arterial Highway (Hudson River to Oakland Street)	0.28	Asphalt Concrete Reconstruction and Widening of Bridge Deck 736' Long Prestressed Concrete Beam Bridge, 64.6' Span	$27,000 Plans $5	486,000
Warren Rte. 8	RC61-97	Riverside-Wevertown, Part 1, S.H. 5055; Bridge No. 1 (Riverside Bridge)	0.06	Bridge Repairs	$3,900 Plans $5	71,000
Washington Rte. 372	RC61-87	Cambridge Village, S.H. 1082	1.02	Asphalt Concrete	$2,500 Plans $5	42,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Fulton Rte. 349	RC61-100	Gloversville-Mayfield, S.H. 33; Gloversville-Broadalbin, Pt. 1, S.H. 248; Gloversville-Broadalbin, Pt. 2, S.H. 1935	3.58	Asphalt Concrete Type 1A	$8,000 Plans $5	141,000
Fulton Rte. 29	FARC 61-65	Johnstown-Broadalbin, Pt. 1, S.H. 544; Johnstown-Broadalbin, Pt. 2, S.H. 543 Proj. No. F-340(6)	6.42	Cement Concrete Pavt. = 6.38 Mi. Misc. Work = 0.04 Mi.	$100,000 Plans $5	1,833,000
Fulton Rte. 30	RC 61-98	Northville Village: Main Street and Reed Street S.H. 9365	0.49	Asphalt Concrete	$2,000 Plans $5	39,000
Herkimer Rte. 5	RC 61-88	Little Falls-East Creek, S.H. 456 East Creek, S.H. 5159	1.26	Asphalt Concrete Type 1A	$5,500 Plans $5	100,000
Herkimer Rte. 28	RC 61-89	Middleville Village-Newport Village, S.H. 5064; Middleville-Poland, S.H. 461; Poland Village-Coldbrook Village, S.H. 5069	4.34	Asphalt Concrete Type 1A	$13,000 Plans $5	237,000
Herkimer	M-61-8	Days Spillway-Barge Canal-App. ¾ Mi. East of Utica City Line	....	Rehabilitation of Race Behind Spillway Headgate	$2,500 Plans $5	44,500
Oneida Rte. 412 & 12B	RC 61-90	Hamilton College-Clinton, S.H. 1610; Clinton Village-College Street, S.H. 9061; Clinton Village, S.H. 877	0.72	Asphalt Concrete Type 2A	$2,000 Plans $5	35,000
Oneida Rte. 5	RC 61-91	Utica-Oneida Castle, Part 2, S.H. 271; Utica-Oneida Castle, Part 1, S.H. 250; Kirkland-New Hartford, S.H. 9205	3.09	Asphalt Concrete Type 1A	$13,000 Plans $5	240,000
Oneida	M-61-7	New London Spillway	....	Repair Spillway	$1,400 Plans $5	24,500
Oneida	U. S. 105	Lock 22E and Lock 21E in and Near the City of Rome	....	New Approach Slabs, Gates and Misc. Work	5% of Bid Plans $10	Confidential
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga Rte. 104A	RC 61-73	Sterling-Oswego Road, S.H. 685	4.09	Asphalt Concrete Type 1A	$11,000 Plans $5	201,000
Oswego Int. Trg. Rte. 81	FITS 61-16	Interstate Route 505 (Central Square-Parish) FISH 58-26 (Parish-Jefferson County Line, Pt. 1) FISH 59-1 (Parish-Jefferson County Line, Pt. 2) FISH 59-22 Proj. No. I-81-2(29)	20.01	Traffic Signs	$3,300 Plans $5	58,000
Seneca Rtes. 5, 20, 96A	FATS 61-17	Geneva-McDougall, S.H. 8183; Geneva-Waterloo, S.H. 5087; Geneva-Waterloo, Parts 2 & 3, S.H. 8240 Proj. F-U-452(9), U-406(6)	2.69	Traffic Signs and Delineators	$1,500 Plans $5	$26,000
Tompkins Rte. 13	RC 61-72	Ithaca-Varna, S.H. 1867; Ithaca-Dryden, Part 1, S.H. 681 Varna Crossing, S.H. 5225	5.06	Asphalt Concrete Type 1A	$21,000 Plans $5	374,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee Rte. 63	RC 61-99	Alabama-Batavia, Pt. 2, S.H. 1402A; Alabama-Batavia, Pt. 2, S.H. 1402B; Alabama-Batavia, Pt. 2, S.H. 1402	2.95	Asphalt Concrete = 2.82 Mi. Misc. Work = 0.13 Mi.	$19,000 Plans $5	340,000
Genesee Rte. 262	RC 61-22	Elba-Byron, Part 1, S.H. 48-14; Elba-Byron, Part 2, FASSH 48-13; Elba-Byron, Part 3, FASSH 50-6	6.54	Asphalt Concrete	$17,000 Plans $5	301,000
Monroe	M-61-6	East Guard Lock-Erie Canal—Rochester	....	Cleaning and Painting	$400 Plans $5	7,500
Wyoming Rte. 78	FARC 61-2	Java Center-Waldo Corners-Smith Corners, S.H. 1716 Java Center-Java Village, S.H. 894 Proj. F-1158(2)	5.95	Asphalt Concrete = 5.81 Mi. Misc. Work = 0.14 Mi.	$43,000 Plans $5	792,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, 65 Court Street, Buffalo 2, New York						
Erie Rte. 78	RC 61-76	Transit, Part 1, S.H. 88 Transit, Part 2, S.H. 89	7.00	Asphalt Concrete	$47,000 Plans $5	865,000
Erie Rte. 62	RC 61-101	North Collins-Lawton, S.H. 524 Hamburg-North Collins, S.H. 523	4.87	Asphalt Concrete = 4.78 Mi. Misc. Work = 0.09 Mi.	$31,000 Plans $5	567,000
DISTRICT No. 6, WM. J. DENNIS, District Engineer, 30 West Main St., Hornell, N. Y.						
Steuben Rte. 15	FARC 61-86	Campbell-Bath, S.H. 5224; Bath-Savona, S.H. 754 Proj. F-225(19)	3.02	Asphalt Concrete	$16,000 Plans $5	294,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Franklin & Jefferson & St. Lawrence Rtes. 3, 177, 87, 186, 56, 37C, 10	RC 61-94	Br. No. 1, S.H. 985A; N.Y.C.R.R. Overhead, Arsenal St. Watertown Arterial: Br. No. 1, S.H. 428; Br. No. 2, S.H. 835; Br. No. 3, S.H. 8418; Br. No. 2, S.H. 1168; Br. No. 2, S.H. 1265; Br. No. 1, S.H. 1587; Br. No. 1, S.H. 1862	....	Cleaning & Painting 9 Bridges	$1,100 Plans $5	20,000
St. Lawrence Rte. 68	RC 61-102	Ogdensburg-Canton, Pt. 1, S.H. 732 Ogdensburg-Canton, Pt. 2, S.H. 733	2.86	Asphalt Concrete, Type 1A	$7,000 Plans $5	124,000
DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Chenango Rte. 23	RC 61-67	Norwich-Plymouth, S.H. 112	4.76	Asphalt Concrete	$15,000 Plans $5	262,000
Delaware Rte. 17B	RC 61-69	Hancock-Long Eddy, Pt. 2, S.H. 8503 Hancock-Long Eddy, Pt. 1, S.H. 5671	5.30	Asphalt Concrete	$14,000 Plans $5	262,000
Otsego Rte. 28	RC 61-68	Milford-Cooperstown, S.H. 5445	6.12	Asphalt Concrete	$12,000 Plans $5	228,000
Sullivan Rte. 42	RC 61-66	Forestburg-Monticello, S.H. 1708	6.72	Asphalt Concrete	$18,000 Plans $5	326,000
Sullivan & Ulster Rte. 209	FARC 61-93	Port Jervis-Wurtsboro, Pt. 2, S.H. 8287 Wurtsboro-Ellenville, S.H. 8080 Proj. No. F-443(5)	8.74	Asphalt Concrete, Type 1A; 1 Br. Corrugated Plate Pipe & Arch, 33.17' ∞ SKEW Span; 2 Brs. Comp. WF Beam: 1 Span 100'; 1 Span 84'	$140,000 Plans $5	2,607,000
DISTRICT No. 10, A. M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau Rte. 24	FALIE 61-4	Long Island Expressway (Jericho Turnpike-South Oyster Bay Road) Proj. U-862(34)	3.05	Roadside Development	$12,000 Plans $5	210,000
Suffolk Rte. 27A	RC 61-92	Babylon-Bayshore, S.H. 743	2.46	Asphalt Concrete = 2.37 Mi. Misc. Work = 0.09 Mi.	$27,000 Plans $5	489,000

Any projects in this letting that are on the Federal Aid highway system are subject to the provisions of the "Federal Aid Highway Act of 1956," being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifi-

(Continued on opposite page)

OFFICIAL PROPOSALS
(Continued from opposite page)

cations are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

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The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: July 20, 1961

Ministry of Public Works and Communications
La Paz International Airport

CALL FOR BIDS

By order of the Minister and in accordance with Supreme Resolution No. 102576 of April 14, 1961, the national and foreign construction companies, who are duly capable of doing so, are called on to present bids for the construction of the La Paz International Airport, at El Alto. This work will be done under the direction and fiscal administration of the Ministry of Public Works and Communications and its administrative-technical organization, the General Direction of Civil Aeronautics, based upon the documents, plans and specifications prepared according to contract by the consulting engineering company, "Airways Engineering Corporation of America".

The above mentioned documents may be obtained by paying seventy-five American Dollars ($US 75) or its equivalent in Bolivian money, at the following offices.

Direccion General de Aeronautica Civil y Comercial de Bolivia, Avda. Camacho No. 1372, La Paz, Bolivia.
Airways Engineering Corporation of America, 1212 18th Street, N. W., Washington 6, D. C.

The construction includes the following work:

1. Airfield construction—earth moving, grading, compacting, and paving of the landing strip, taxiways and apron.

2. Airfield anexes—Utilities: purification, storage and provision of potable water; drainage; sewers and sewage treatment; electric power; fuel distribution; airfield lighting; communications; navigational aids; roads; automobile parking areas, and fencing. The bids should be presented under double cover, closed, and sealed with sealing-wax, at the Direccion General de Aeronautica Civil y Comercial of Bolivia, Avda. Camacho No. 1372, third floor, La Paz, (Bolivia) before 12 o'clock noon, La Paz time, Thursday, July 20, 1961. The bids will be opened the same day at 4 p. m.

Each proposal must be sent on sealed paper with the required legal stamps (one ten thousandth (1/10,000) of the total amount of the proposal or a check in this amount). Each proposal must be accompanied by a draft or certified check, bid bond or some other acceptable form of guarantee, in the amount of Fifty Thousand American Dollars ($US 50,000) or its equivalent in Bolivian money. Further data or information in connection with the present bidding may be obtained at the offices of the Direccion General de Aeronautica Civil de Bolivia, or of Airways Engineering Corporation of America in Washington, D. C.

La Paz, May 9, 1961
Mario Sangines Uriarte
Minister of Public Works and Communications

OFFICIAL PROPOSALS

OFFICIAL PROPOSALS

AUSTRALIA

SNOWY MOUNTAINS HYDRO-ELECTRIC AUTHORITY

Tenders are invited for Schedules of Rates contract for furnishing labour and materails and performing all work for the construction in New South Wales, Australia, of the following:

CONTRACT NO. 20,062—

ISLAND BEND DAM
SNOWY-GEEHI TUNNEL (SNOWY SECTION)
AND APPURTENANT WORKS

Island Bend Dam will be a concrete gravity dam approximately 135 feet high with a crest length of approximately 470 feet.

The Snowy Section of Snowy-Geehi Tunnel will comprise the construction of approximately 17,900 feet of tunnel, including approximately 570 feet of 16 feet diameter lined circular tunnel, 120 feet of 28 feet diameter lined circular tunnel, 25 feet of transition and 17,200 feet of horseshoe shaped tunnel partially lined with concrete, 20 feet 4 inches high and 20 feet 8 inches wide. The contract also includes the construction of a control structure under ground with a vertical control shaft approximately 500 feet deep and a surface hoist house.

RELATION TO OTHER WORK

The Authority has recently invited tenders for the construction of the Eucumbene-Snowy Tunnel under two contracts—Contract No. 20,044 and Contract No. 20,045. The works of Contract No. 20,062 are immediately adjacent to those of Contract No. 20,045 and the provisions of the specifications for Contract No. 20,062 will, where appropriate, be substantially similar to those of Contracts Nos. 20,044 and 20,045.

ALTERNATIVE TENDERS

Tenderers are invited to submit tenders for each of Contracts Nos. 20,044 and 20,045 and 20,062 separately and may submit alternative tenders based on the following combinations of contracts:

(a) Contract No. 20,044 and Contract No. 20,045 together;
(b) Contract No. 20,045 and Contract No. 20,062 together;
(c) Contract No. 20,044, Contract No. 20,045 and Contract No. 20,062 together.

PRELIMINARY INFORMATION

Initial information comprising a description of the works, preliminary drawings and a preliminary schedule of quantities will be available, free of charge, at the Head Office of the Authority at Cooma on 22nd May 1961 and at the places set out below for tender documents on 29th May 1961.

TENDER DOCUMENTS

The tender documents consisting of the form of Tender, Conditions of Tendering, General Conditions of Contract, Draft Form of Agreement, Schedules of Rates, Tables of Estimated Quantities and Amounts, Specification and Drawings will be available on 22nd June 1961 and may be obtained by prospective Tenderers on payment of $22.50 per set on application to:

Australian High Commissioner,
Royal Bank Chambers,
100 Sparks Street,
OTTAWA, ONTARIO, CANADA.

Australian Consulate-General,
International Building,
Rockefeller Center,
636 Fifth Avenue,
NEW YORK, N. Y., U.S.A.

Australian Consulate-General,
125 Kearney Street,
SAN FRANCISCO, CALIFORNIA,
U.S.A.

Liaison Officer,
Snowy Mountains Hydro-electric Authority,
C/—United States Bureau of Reclamation,
Federal Center,
DENVER, COLORADO, U.S.A.

Four additional sets of documents for purposes of tendering will be provided free of charge at the time of inspection of the site.

All relevant information may be obtained from the above offices.

SUBMISSION OF TENDERS

Tenders for the contract must be submitted in duplication in accordance with the Conditions of Tendering, enclosed in sealed envelopes appropriately endorsed with the contract number and name of the works tendered for, addressed to:

The Business Manager,
Snowy Mountains Hydro-electric Authority,
Post Office Box 332,
COOMA NORTH, N.S.W., AUSTRALIA.

The tenders must be lodged in the Tender Box at Head Office of the Authority at Cooma or be sent by prepaid post in time to be delivered in ordinary course of mail by 12:00 noon on Monday, 4th September 1961

K. See, Business Manager

Bids: June 29, 1961

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m., Advanced Eastern Standard Time, on June 29, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE 505, EAST GLEN AVENUE TO SIZER STREET, NEW PROJECT NO. 1-81-2(22)77, OLD PROJECT NO. 1-1127(6), ITEM 72B, CITY OF SYRACUSE, ONONDAGA COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-183.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Earl E. Towlson, District Engineer, New York State Department of Public Works, 333 East Washington Street, Syracuse, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. Refunds of deposits for plans, specifications and proposals will be made only in case the deposits of individual sets are $10.00 or more, per Chapter 835, Laws of 1960.

The Engineer's Estimate of cost for this work is $19,110.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Department of Public Works" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Read the Official Proposal Column of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

Bids: July 6, 1961

The Chicago Housing Authority CHA Project Illinois 2-37—Stage IV

THE CHICAGO HOUSING AUTHORITY invites properly qualified bidders to submit proposals for all labor and material required to complete the General Construction of CHA Project Illinois 2-37, Stage IV. The work includes eight 16-story elevator-type apartment buildings containing 1,261 dwelling units, underground utilities and related site improvements, all in the general area bounded by West 51st Street, South State Street, West 54th Street and the railroad right-of-way west of south Federal St.

Bids will be received until 2:00 P.M. (local time) on July 6, 1961, by mail or by hand in Room 1500 of the Chicago Housing Authority, 608 South Dearborn Street, Chicago 5, Illinois, immediately after which time and at such place all bids will be publicly opened and read aloud.

Bid documents including plans and specifications may be obtained on or after June 6, 1961 by depositing $75.00 in the form of a cashier's check, certified check or telegraphic or postal money order with Shaw, Metz and Associates, Architects and Engineers, 208 South LaSalle Street, Chicago 4, Illinois.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5610) will be received at Page, Arizona, until 3 p.m., Mountain Standard Time, July 13, 1961, for furnishing labor and materials for Glen Canyon-Shiprock 230-Kilovolt Transmission Line—Transmission Division, Arizona-New Mexico—Colorado River Storage Project. Location Coconio, Navajo and Apache Counties, Arizona, and San Juan County, New Mexico. Principal items are 16,710 cu. yds. excavation; 4,680 cu. yds. concrete; 11,505,000 pounds, furnishing 50, 55, 60, 70 and 80-foot tower bodies and leg extensions of various types; 770 towers, erecting 50, 55, 60, 70 and 80-foot towers of various types; 182 miles of line, stringing three 1,272,000 circular-mil, 45/7 ACSR conductors and two ½-inch galvanized steel overhead groundwires; and other work. Completion time 850 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City 10, Utah; P. O. Box 277, Page, Arizona; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Sealed bids for alterations for installation of mail-flo machinery at the U. S. Post Office (Main), Philadelphia, Pa., will be received until 2:00 P.M., June 23, 1961; and then publicly opened. Bidding material may be obtained from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y., from the Custodian of the building where the work is to be done, or from the Chief, Philadelphia Field Office, Design & Construction Division, Room 902, U. S. Custom House & Appraisers Stores, 2nd & Chestnut Street, Philadelphia 6, Pa.

Sealed bids from Small Business Concerns for extension and modernization at the U. S. Post Office, Lock Haven, Pa., Project #00863 will be received until 2:00 P.M. E.D.S.T. July 17, 1961, and then publicly opened. Bidding material may be obtained after 6-19-61 from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y., from the Custodian of the Building where the work is to be done, or from the Chief, Field Office, Rm. 902 U. S. Customhouse & Appraisers Stores, Philadelphia 6, Pa.

OFFICIAL PROPOSAL

RATE $2.70 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a. m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Class. Adv. Div.; Engineering News-Record, P. O. Box 12, New York 36, N. Y.

EMPLOYMENT OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $45.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

JUNE 29TH ISSUE CLOSES JUNE 19TH

UNDISPLAYED RATE:

$2.70 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

HYDRO MECHANICAL ENGINEER

Overseas Assignment
24-Month Contract
as

POWERHOUSE MECHANICAL ENGINEER

To supervise the construction of a Powerhouse on a Hydro-Electric dam in Thailand. Must have a minimum of five years experience on the installation of penstocks, radial gates, fixed wheel gates, turbines and the mechanical features of electrical switch gear. Experience in related work such as form work, concrete placement around equipment and the operation of hydro-electric equipment helpful.

24-Month contracts, living quarters furnished, excellent compensation.

Write fully include salary data

to

SVERDRUP & PARCEL AND ASSOCIATES, INC.

915 Olive St. St. Louis 1, Mo.

Prestressed Precast Concrete

Qualified engineer-production man, to take complete charge of precast plant just starting large concrete panel job. Only top-flight man with first class experience and background need apply. Liberal terms. Reply:

E. J. BURNS

Mid-South Constructors, Inc.

P. O. Box 427, Montgomery, Alabama

Phone 264-8401

DESIGNERS — SURVEYORS

Highway and Bridge Designers. Minimum 8 years exp. Registered Land Surveyors for Illinois. Usual benefits—permanent.

MACCABEE, CAMPBELL & Assocs.

173 W. Madison St. Chicago 2, Ill.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 645 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• *POSITIONS VACANT*

Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. Preference will be given to applicants with practical experience. Permanent position with established firm in business since 1929. Moving expenses paid. Send resume, including education, experience, and personal qualifications to P-6245, Engineering News-Record.

Chief Estimator—Leading West Coast contractor has an opening for a top man with 10 to 15 years heavy construction estimating and a minimum of 5 years field experience. Applicant must have been part of a construction company Management Staff, and a portion of his experience must have been in the Western States. Salary is open, with excellent opportunity for the right man. P-6795, Engineering News-Record.

Wanted—Graduate Civil Engineer experienced in sewer, water and concrete construction to work as foreman of construction crews for long established company in Northern Ohio area. Salary open. P-6806, Engineering News-Record.

Graduate Engineer—Estimator for Heavy Construction such as sewers, waterlines, bridges and dams. Permanent. Location Ohio. P-6819, Engineering News-Record.

Detailers—Struct. steel—experienced only. David Zarin & Assoc., Harborside Term. Bldg., 34 Exchange Pl., Jersey City, N. J., HE 4-4411.

Desire Project Engineer—Superintendent. Must be thoroughly experienced in construction of water filtration plants. Must have had experience with batching plants & pumpcrete machines. Must know form work thoroughly and be able to organize all trades. Must also be thoroughly familiar with corp. of engineers work. This is a position with a large general contractor with rapidly expanding business. Only top men in this field will be considered. Salary commensurate with ability. P-6831, Engineering News-Record.

Graduate Civil Engineers with min. 2 yrs. highway and/or drainage experience. Positions open in Conn. consulting firm. Send complete resume including references, salary requirements and availability to P-6811, Engineering News-Record.

An employment advertisement in this EMPLOYMENT OPPORTUNITIES section will help you find the engineers you need. It's an inexpensive, time saving method of selecting competent personnel for every engineering job.

• POSITIONS VACANT
(Continued from opposite page)

Experienced take-off man wanted by N. Y. General Contractor. Some purchasing and pricing experience required. Position available July 1st. Reply to P-6815, Engineering News-Record.

Water Works Engineer—Graduate engineer 5-10 years experience design, construction, testing distribution systems. Permanent employment water works management company. Philadelphia, Pa. Reply P-6767, Engineering News-Record.

Soils and foundation engineer—recent graduate—Masters Degree, design and construction experience desirable. Salary open. Location Southwest. Write P-6838, Engineering News-Record.

Draftsmen, Structural-Experienced, Checkers and detailers of structural steel shop dwgs. Relocation expenses. Fink & Zwecker Co., 1100 Crescent Ave., N. E., Atlanta 9, Ga.

Sanitary Engineer with extensive experience in preliminary engineering, detailed design, general overall supervision or client contact on sanitary projects. Submit complete resume of education, experience, and qualifications, together with salary requirements. Stanley Engineering Company: Muscatine, Iowa.

Electrical, Mechanical Engineers—Minimum 5 years experience in grain elevators. Must be college graduate and preferably licensed, capable of handling Electrical and Mechanical Engineering Department for established engineering firm in South. State salary expected, etc. Reply in writing to P-6867, Engineering News-Record.

Assistant City Engineer, St. Clair Shores, Michigan. Required BS Degree, Civil Engineering and Registered professional Civil Engineer in Michigan. Minimum 3 years professional experience. Salary range $7904-$8879. Applications—City Clerk, 27600 Jefferson Avenue, St. Clair Shores, Michigan. Last date for filing, Monday, June 19, 1961.

Superintendent capable experienced for Silica Sand Washing and Screening Plant. Experienced in welding and maintenance of heavy equipment. Salary and profit sharing. Juniata Silica Company, New Bloomfield, Perry Co., Pa.

Structural Engineer: Graduation from a four year college or university with major course work in structural engineering plus 3 years experience. Salary effective July 1st $7579-$9100 per annum. Complete details by writing to Director of Personnel, Municipal Building, Hartford, Conn.

Construction Superintendent Wanted—Mid-west, large Government project. Send resume and salary required and previous experience. P-6850, Engineering News-Record.

Borough Staff Engineer. Engineer—(Registered Civil Engineer) having registration in Pennsylvania, desired with experience in engineering, layout, construction of highways and sewers, to serve as first Borough Staff Engineer for a rapidly expanding municipality. Applicant must be a working engineer qualified and able to do all the work from preliminary plans to the completed project. Further details are available upon writing the Borough Manager, Borough of Monroeville, 2700 Monroeville Road, Monroeville, Pennsylvania.

Trade Association Director. Engineering Degree required, P. E. License desired. Experienced in design, control & placement of bituminous mixes. Able to work with public officials, handle office, write fluently, etc. Will consider unusually mature 30 & up to 50 years. Location—South. P-6886, Engineering News-Record.

• EMPLOYMENT SERVICES

Write for free copy, "National Employment Reports" Describes hundreds of $7,000-$35,000 Executive job openings. National Employment Reports, 20 E. Jackson, 902-B, Chicago 4.

• POSITIONS WANTED

Electrical Construction Engineer, age 36, B.S.E.E. '50, (Power), P.E., 7½ years industrial and military construction experience, 6 years overseas, immediately available, desires foreign employment. PW-6828, Engineering News-Record.

Construction Superintendent past retirement but still active desires job as inspector for architect or owner or subordinate job with contractor. PW-6824, Engineering News-Record.

Available
PRESIDENT - VICE PRESIDENT
ENGINEERING - CONSTRUCTION

Presently Vice President medium sized engineering construction company. Formerly chief estimator for world wide corporation. All phases including sales, procurement, accounting, estimating, architectural engineering and field construction. Private and public: industrial and commercial projects. Development, client negotiations and leaseback. Civil engineer, master's degree in business administration, professional engineering licenses. Modest investment if required.

PW-6859, Engineering News-Record
Class Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• POSITIONS WANTED

Civil—Sanitary—Presently in charge 54 MGD sewage treatment plant. Varied experience design and city engineering. BS Oregon State MS Georgia Tech. Reg. PE, age 35, Geo. M. Jacobs, 2928 Westmoreland Dr., Nashville, Tenn.

Master Mechanic or Heavyduty Mech. & Welder. Prefer good paying dirt spreads. 20 yrs. experience all kinds of equipment. Tom Findley, 304 E. Cross St., DeWitt, Arkansas. Ph WH 6-4404.

B.S. Arch. Engr., P.E., 34, 11 years comprehensive experience in all phases industrial and commercial construction, architectural and structural design. Desires responsible position with potential. PW-6738, Engineering News-Record.

Construction Supt. Heavy Construction. PW-4482, Engineering News-Record.

Project Manager, entire supervision, contract negotiations, estimating, claims, 22 yrs. hvy. constr. major projects U.S. & O.S. PW-6804, Engineering News-Record.

General Superintendent-Proj. Mgr. Hvy Const. roads, bridges, bldgs, flood control tunnels, sewage & sewage disp. Concrete mech. background. PO Box 48 Clayton 5 Mo.

Executive, 16 yrs const exp, capable administrator, mgr. atty, efficient coordinator, govt contracts, female. PW-6853, Engineering News-Record.

Project Manager or superintendent, P.E., eighteen years general and heavy construction experience including operation of self-owned company. Will relocate. PW-6873, Engineering News-Record.

Engineer, BSCE, 25 years experience: Inspection, layout engr. (6 parties), field engr., also asst. to supt. in steam plant, lock, dams, and building construction. Seeks job as field or layout engr. or in related field. Temporary assignment accepted. Age 57. $150 per week. PW-6869, Engineering News-Record.

Soils Technician, 26, 2 yrs. lab. experience. B.S. with courses in soils. PW-6857, Engineering News-Record.

M.S.C.E., P.E., 33, married, 8 years struct. and bridge exp. Presently bridge design supervisor. Overseas or midwest. PW-6878, Engineering News-Record.

General Superintendent — C.E. — Age 50 — Experienced primarily in paving & bridge work. 27 years in responsible positions as Superintendent, estimator & engineer on all types of highway and heavy construction. Thorough knowledge of methods, equipment & costs. Proven ability in customer & labor relations. Now employed; desire more responsibility. Minimum $15,600. PW-6874, Engineering News-Record.

Civil Eng; many yrs exp in all phases engrd. const; prefer New Eng. or overseas; fluent Spanish & French. PW-6882, Engineering News-Record.

Const. Supt. B.S.C.E. 14 years building heavy construct. missile and marine installations. Know trades estimating. Worked 6 years Latin America. Multilinguist. PW-6883, Engineering News-Record.

Estimator, Construction Cost Changes a specialty, exp'd with military installations, available immed. domestic or foreign assignment. PW-6885, Engineering News-Record.

• SELLING OPPORTUNITY WANTED

Registered P.E. seeks lines in fabricated steel products or related items requiring engineering, estimating and sales experience. Operate from own office in Birmingham, Alabama. Reply RA-6794, Engineering News-Record.

GRAVER

has excellent openings for the following list of qualified personnel:

Junior and Senior Estimating Engineers
Stress Analysts (Research)
Chemical Engineers (Research)
Welding Development Engineers
Metallurgical Engineers
Design Engineers (Plate Structures)
Junior and Senior Contracts Engineers

All of the above should hold degrees and their training and experience should be on structural design as related to large plate structures; such as, field erected containers, towers, stacks, etc. Address all applications to: Industrial Relations Department,

GRAVER TANK & MFG. CO.
Division—Union Tank Car Company,
35 East Wacker Drive, Chicago 1, Illinois

HIGHWAY and DRAINAGE
ENGINEERS

Permanent positions available for graduate Civil Engineers with a minimum of five years' experience in Highway, Drainage, or Bridge Design.
Company benefits include hospitalization, insurance, sick leave and vacation.
Send complete resume, references and salary requirements to

RACKOFF ASSOCIATES
867 So. James Road Columbus 13, Ohio

CITY ENGINEER

The city of Liberty, Missouri, is seeking a City Engineer. Population 9,000. Desire Civil Engineer graduate with recent experience in Municipal Engineering, registered in the State of Missouri. An unusual opportunity with salary based on experience. Send detailed resume to

C. HOWARD CLARK, City Councilman
717 Hillside, Liberty, Missouri

CIVIL ENGINEER POSITION OPEN

Graduate Civil Engineer 35-45. Experienced railroad engineering layout and construction for position involving railroad construction estimates, purchasing and related administrative duties. Salary open.
Reply:
P-6862, Engineering News-Record
645 N. Michigan Ave., Chicago 11, Ill.

REPRESENTATIVES WANTED

Sales and promotional work with pile foundation contractors, architects and engineers. Central, Southern and Western U. S. Patented Pile Fittings for Shell, H-Beam, Pipe and Timber.

RW-6860, Engineering News-Record
Class Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

EMPLOYMENT PROBLEM?

When you are in need of specialized men for specialized jobs, contact them through an employment ad in this publication.

AUCTION

Mobile, Earth Moving, & Miscellaneous Equipment of

CAMDEN COKE PLANT

Of The Public Service Electric and Gas Co.

Front & Chestnut Sts., Camden, N.J.

Tuesday, June 27

at 11AM (DST) on premises

RAILROAD EQUIPMENT—Industrial Brownhoist 30 Ton Self Propelled Railroad Crane with 67' Boom (1950); G.E. Diesel Electric 45 Ton 300 HP Switch Engine (1947) Serial 29057; G.E. Diesel Electric 25 Ton 150 HP Switch Engine (1950) Serial 30596; McMyler Steam Railroad Crane; Seven 50-Ton Standard Gauge Yard Gondola Cars; Three 50-Ton Standard Gauge Yard Side Dump Cars. *EARTH MOVING EQUIPMENT*—2 LeTourneau Super C Tournadozers (1950) with 11' Dozer Blades; LeTourneau Model E-16 Pan Type Scraper 9 cu. yds. capacity (1950). *COKE HANDLING EQUIPMENT* 7 Rubber Belt Conveyors—36" x 253' C to C, 36" x 148', 30" x 57', 38', 29' and 27' C to C and 24" x 5'6" C to C with Head and Tail Pulleys, Idlers and Return Idlers; 6 Hunt, Gyroset, Robbins and Vibrex motor driven Vibrating Screens, 3'3" x 5' to 5' x 8'; 3 Gyroset, Mitchell and Gyrex vibrating units; Penna. 24" x 24' single Roll Crusher, Class B; 7 Clam Shell Crane Buckets 1½ yds to 1¾ yds capacity. *MACHINE TOOLS*—Lodge & Shipley 24/20 x 120" centers Geared Head Engine Lathe (1947) Seriol No. 39326; Fosdick 25" Drill Press. *GENERATOR*—A-C 500 KW Generator with Terry Steam Turbine, .8 Power Factor and Pringle Controls, 2 phase, 4 wire. *MISC. EQUIPT. & SUPPLIES*—Quantity Electric Motors 50 HP to 1/50 HP (40 pieces); Quantity Speed Reducers (7); 20 Chain Hoists ¼ Tons 3 Tons capacity; 180 HP Buda Diesel Engines; Quantity Tournadozer Spare Parts, Switch Engine Parts, Railroad Crane Parts; Large Quantity approximately 2945 ft. Rubber Conveyor Belting, 16", 20", 24" and 30" wide (mostly new); Quantity CO_2 and 2½ Gallon Fire Extinguishers; Forge & Blower; Anvil; 2 Vises 6 and 10; Lathe Grinder; Pedestal Grinder; 2 Oil Switches; 2 Capacitors, 90 KVAR, 3 Phase; 3 Transformers, 10 and 15 and 25 KW; 2 Diehl Floor Fans; 2 Vent Fans; 2 1/3 HP Sump Pumps; 2 3-Sheave Blocks; 4 Chain Hoist Trolleys; I-R Port Air Pump; Track Jack; 3 Chipping Hammers; Shaw-Box Hoist; Blow Torch.

Exhibition:

Friday, June 23 and Monday, June 26
From 10 AM to 4 PM.

SAMUEL T. FREEMAN & CO.
Auctioneers

1808-10 Chestnut St., Phila. 3, Pa.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.70 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

BARGAIN!

MODEL 1025 P & H SHOVEL

With 3.2 yard DIPPER. Exclusive P & H Magnetorque. Caterpillar engine, only 2000 hours use, like new.

Contact

RUSH & TOMPKINS CONSTRUCTION CO.
10022—103rd Street, Phone: GA 4-0437
EDMONTON, ALBERTA, CANADA

For Sale

P & H SHOVEL

P & H Model 1055 Standard Shovel. Serial No. 16730 with 3½ C.Y. Bucket. Powered by Caterpillar D-375 Diesel Engine, 36 inch track pads. 1,000 hours since upper works overhauled, zero time since lower works overhauled. Machine is in good operating condition.

Price—As is, Where is—$45,000.00
Located in Colorado

C. F. LYTLE, INC.
1923 Geneva Street, Sioux City, Ia.
Phone: 8-5585

EUCLID LOADER

9BV converted to larger 6-110 GM diesel and extended conveyer. Very good.
Offered subject to prior sale or disposition

L. B. SMITH, INC.
Syracuse, New York Phone: GR 5-2196

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Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Distributors for W. & L. E. Gurley and Wild Heerbrugg Instruments

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

CONSTRUCTION SUPERVISION

Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.

National Schools of Construction
Est. 1952
Satsuma, Florida

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Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 645 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• *SPECIAL SERVICES*

Transmission Lines.—Construction Company specialized in the construction of transmission lines up to 330 KV, sub-stations and distributing systems, offers its services as contractors or sub-contractors anywhere in North or South America. SS-6881, Engineering News-Record.

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CLASSIFIED ADVERTISING INDEX

Albert Pipe Supply Co. 93
Amerlux Steel Products Co. 93
Anderson Equipment Company. 93
Associated Pipe & Fitting Co., Inc. ... 93
Benson-Stead Co. 93
Clark, C. Howard. 91
Cohen Iron Co., Leopold. 93
Concrete Equipment Co. 93
Conmaco Inc. 93
Freeman & Co., Samuel T. 92
Foster Co., L. B. 93
Graver Tank & Mfg. Co. 91
Hencken, Henry 92
Kliebenstein Co., E. H. 92
Lubrecht III, William. 93
Lytle Inc., C. F. 92
MacCabee, Campbell & Associates. ... 90
Mid-South Constructors Inc. 90
Midwest Steel Corp. 93
Mississippi Valley Equipment Co. 93
National Blue Print Co. 92
National Schools of Construction. 92
Parker-Danner Co. 92
Rackoff Associates 91
Rush & Tompkins Construction Co. 92
Seaboard Steel Piling. 93
Smith Inc., L. B. 92
Stanhope Inc., R. C. 93
Sverdrup & Parcel and Associates Inc. 90
Swabb Equipment Co., Inc., Frank. ... 93
Telephone Engineering Co. 92
Valley Steel Products Co. 93

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc. 66
American Institute of Steel Construction ... 14
American-Marietta Co. 85
American Steel & Wire Div., United States Steel Corp. 71-74

C. L. Berger & Sons, Inc. 34
Bethlehem Steel Co. 1
Butler Manufacturing Company 33

Caterpillar Tractor Co. 47-50
The Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div. 42-43
The Commercial Shearing & Stamping Co. ... 79
Concrete Reinforcing Steel Institute 46

Darling Valve & Manufacturing Co. 53
Dodge Division, Chrysler Corp. 38-39

Elgood Equipment Corp. 51

Fireman's Fund Insurance Company 68
Ford Motor Company, Ford Div. 76-77
Franki Foundation Co. 51

The Goodyear Tire & Rubber Co., Metal Products Div. 7

Hewitt-Robins, Inc. 82-83

International Harvester Co., Construction Equipment Div. 8-9; 56-57

Johns-Manville Corp. 60

Keuffel & Esser Co. 63

Lehigh Portland Cement Company 69
Lock Joint Pipe Co. 16

The R. C. Mahon Company 80
McGraw-Hill Book Co., Inc. 95
Mobil Oil Company 4-5
Moretrench Corporation 68

National Tube Div., U. S. Steel Corp. 18

Penn-Dixie Cement Corp. ..... 2nd Cover
Phoenix Bridge Company 51
Portland Cement Association 58
Posey Iron Works, Inc. 52

Raymond International, Inc. 27
Russell, Burdsall & Ward Bolt & Nut Co. . 15

Sika Chemical Corporation ..... 3rd Cover
Spencer, White & Prentis, Inc. 12
Symons Clamp & Mfg. Co. 12

Templeton, Kenly & Co. 46
Thiokol Chemical Corp. 6
E. A. Thompson Co., Inc. 2
The Timken Roller Bearing Co. ..... 4th Cover
Truck Mixer Mfrs. Bureau 64

United States Concrete Pipe Co. 3
U. S. Steel Corp. 10-11; 67
United Steel Fabricators, Inc. 59

Warren-Knight Co. 52
Westinghouse Electric Corp., Apparatus Div. 28-31
Wheeling Corrugating Co. 54-55

Yuba Consolidated Industries, Inc. 20

Zonolite Company 13

Professional Services 94

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 90, 91
Notices
Auction 92
Proposals 87-90
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 92, 93
Advertisers' Index 94

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Good Codes Need Defending

EVENTS ONCE AGAIN DEMONSTRATE the need for eternal vigilance to protect a good building code from being weakened by undesirable changes. For the forces that hinder adoption of a sensible, up-to-date code do not disappear when the code is adopted; they are merely temporarily frustrated.

St. Louis offers the latest example of a building code in peril (see p. 32). The city adopted a brand-new code only last March (ENR Mar. 30, p. 18). It followed the Basic Building Code of the Building Officials Conference of America, a national model code, and all hailed it as a stimulant to building construction in that city. But in the short space of only three months, the Board of Aldermen has submitted numerous amendments, generally at the instigation of the same groups who opposed the new code.

Fortunately, local engineers are alert to the threat. They have counseled the public (through the newspapers), the mayor and the Board of Aldermen on the necessity of rejecting nearly all these amendments as counter to the public interest. With public support, the result was a sound defeat for these efforts to cripple the new code. St. Louis engineers are to be commended for their vigilance and prompt action.

The lesson to engineers elsewhere should be clear. It takes a long, hard fight to pass a good building code. And the battle doesn't end with its passage. Once passed, the code must be defended, and engineers and architects should be in the forefront of the fray, in keeping with their responsibilities for public health and safety.

Win for Truckers' Lobby?

THE FEDERAL-AID HIGHWAY BILL has passed the House and has moved right along in the Senate. Its passage, which seemed certain as ENR went to press, will insure completion of the Interstate System on time.

Enactment of this legislation will be applauded widely, not only by roadbuilders but by many others who understand the benefits that accompany highway improvement and appreciate the role that highways play in our national economy.

Only one small cloud obscures an otherwise bright and sunny highway picture—a cloud in the shape of an unbalanced tax schedule. Specifically, financing provisions of the bill do not require the trucking industry to pay its fair share of the costs of better highways.

President Kennedy's original proposal called for the tax on diesel fuel to rise from 4 to 7 cents per gal, and the use tax on trucks weighing more than 26,000 lb to increase from $1.50 to $5.00 per 1,000 lb. The present bill leaves the diesel fuel tax unchanged, increases the use tax to $3.00 per 1,000 lb, and increases taxes on tires, inner tubes and tread rubber. It also will draw some $143 million from the general treasury in fiscal 1962.

The bill retains the "temporary" 1-cent per gal increase in the federal tax on gasoline, which had been scheduled to expire July 1.

The Administration's original proposal followed very closely the incremental method of assigning highway costs, a method backed by the Bureau of Public Roads and verified by preliminary results from the AASHO Road Test at Ottawa, Ill. The current bill follows no logical pattern in relating taxes to costs, and is in fact a compromise forced by the powerful trucking lobby in Washington who applied tremendous pressures on our lawmakers at the time the bill was being shaped.

Congress has chosen to ignore findings of the elaborate and costly test road and the comprehensive highway cost allocation study required by the 1956 Act and submitted to them last January. Net effect is to destroy some of the value of both efforts.

The motoring public will reap rich rewards from improved highway transportation if the bill and its financing measures are passed in the Senate as in the House. But the strong trucking lobby will have seen to it that the general public pays more, the truckers less, for the benefits received.

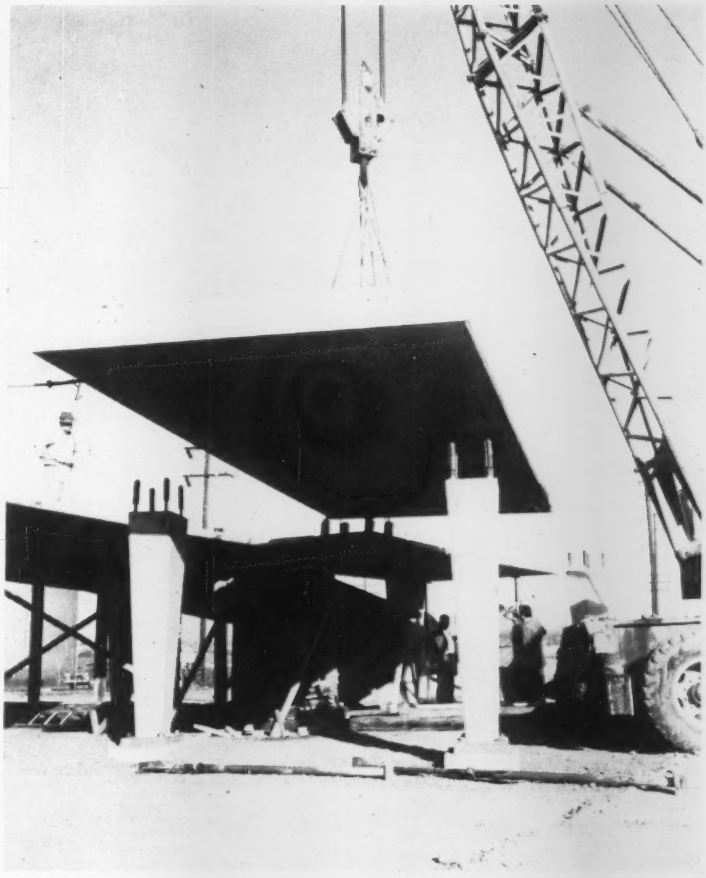
Sheet-Aluminum Bridges

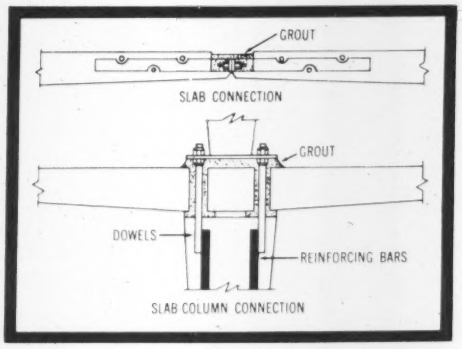
THE LATEST INNOVATION in short-span bridges has now arrived. The first sheet-aluminum structure will open for traffic in Virginia in August.

Here is an exciting development to be hailed as was the prestressed concrete beam in its early applications over a decade ago. Acceptance of the triangular aluminum-sheet girders by state highway departments—and by the Bureau of Public Roads on an experimental basis—means a new competitor joins concrete, steel, structural aluminum and timber in the contest to supply good bridges at low costs.

There are more states than one ready to accept the light-gage metal bridge. Last week's article on the Virginia bridge (ENR June 8, p. 30) pointed out that it becomes the first of its kind in the U.S. by a relatively small margin—ahead of one already in fabrication in New York and another soon to be started in Maryland. Moreover, the three bridges involve two different producers of aluminum. In Virginia, it's Reynolds Metals Co.; in New York and Maryland, it's Kaiser Aluminum and Chemical Corp. What better competitive conditions could there be for the coming of a significant new product?

Because it is a product that will be given a fairly hard sell by the aluminum producers—but more important, because it is a good product promising real economies—the sheet-aluminum bridge rates the attention of all highway departments, all bridge designers.





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Remember when you used to get 300 feet of hole from one rock bit in granite? It wasn't very long ago. Just about five years. Would you settle for the same footage today? Why should you? You can get 500 feet under identical conditions with a bit that costs less than your 300 footer.

This extra footage, this reduction in cost per foot of hole, is the sum of many improvements in rock bit design, materials and manufacture—most of them pioneered by the Timken Company.

A large share of every Timken Company sales dollar is plowed back into research and development. For example, we lease a mine to conduct experiments that lead to better, more durable, more economical rock bits. Our Research Laboratory developed a new bonding process to hold carbides more securely to bit bodies. Our Rock Bit Engineering Department is constantly field testing new applications to overcome drilling problems. You see the results—and count the savings in dollars and cents—every time you drill a hole with Timken bits.

Underlying all these technological advancements is the philosophy of the Timken Company—Service to the customer. Our rock bit sales engineers are available for immediate service from branch offices and warehouses, located in principal cities throughout the country.

Customer service, product excellence and facilities to pioneer new developments have enabled the Timken Company to become one of the world's largest manufacturers of removable rock bits. It explains in part why Timken rock bits are preferred by so many drillers.

The Timken Roller Bearing Company, Canton 6, Ohio